Corrective Action Plan
Pigeon Property
1705 Route 128
Westford, Vermont 05494

SMS # 2019-4863

July 9, 2021

Prepared for:

Co-Operative Insurance Companies
292 Colonial Drive
Middlebury, VT 05753

LE·Environmental
21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net

LEE # 19-138

Contents

Appendices:

A. Maps
   - Site Location Map
   - ANR Atlas Map
   - Site Map
   - Excavation of Contaminated Soil Plan
   - Adjoining Property Owners Map
   - Archeologically Sensitive Area Map

B. Phase II ESA and SSI Executive Summaries and Contamination Summaries
C. Cost Estimate

EXECUTIVE SUMMARY

LE Environmental (LEE) prepared this Corrective Action Plan (CAP) for the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). This CAP was prepared according to Section 35-606 of the Vermont Department of Environmental Conservation (DEC) I-Rule, effective July 2019. This CAP was prepared for the Co-Operative Insurance Companies of Middlebury, Vermont, and the Site owner is the Pigeon Family Living Trust

The Site includes a vacant residence and a former bus garage on approximately 3.3 acres of land, on the north side of Route 128, in the center of Westford. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858. Historic Site use has included residential, with a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property. A building was noted on or near the northeastern property line on historic (1869 and 1915) maps. The building was gone by 1948.

A Phase I and a Phase II Environmental Site Assessment (ESA) were completed in 2019, and a Supplemental Site Investigation (SSI) was completed in 2021. An abandoned, 1,100-gallon, gasoline underground storage tank (UST) was removed from the Site on June 2, 2020. The UST was a relic of the former gasoline filling station that operated on the Site from circa 1940 through the mid 1980s. The UST was found to be in failed condition upon removal, with extensive rust, pitting, and several large holes in the bottom of the UST. Groundwater was encountered at 6' below grade (bg) in the excavation, and a sheen was noted on the groundwater. Photoionization detector (PID) readings obtained during the removal ranged from 17.1 parts per million (ppm) in soil under the former dispenser island to 2,374 ppm at the top of the tank where piping (not attached to this tank) was found. PID readings ranging from 1,286 ppm to 1,644 ppm were observed under the UST, which was also where groundwater was encountered.

Groundwater was found to be impacted with petroleum related Volatile Organic Compounds (VOCs) at concentrations above the Vermont Groundwater Enforcement Standards (VGES) in the vicinity of the removed UST (MW-1) and in downgradient monitoring well MW-8, while VOC concentrations below the VGES were reported in downgradient monitoring well MW-2 during the most recent sampling event.

Additional soil contamination related to the past property use, including concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) in soil, were also identified during environmental investigations performed at the Site. This contaminated will be remediated under a separate CAP once redevelopment plans for the property are solidified.

Excavation of grossly contaminated soil in the vicinity of the UST, concurrent with off-Site disposal, is recommended to reduce soil and groundwater impacts in the vicinity of the former UST. A Corrective Action Completion Report will be prepared once construction is complete.

1.0 INTRODUCTION

LE Environmental LLC of Waterbury, Vermont (LEE) prepared this Corrective Action Plan (CAP) for the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). This CAP was prepared according to Section 35-606 of the Vermont Department of Environmental Conservation (DEC) I-Rule, effective July 2019. This CAP was prepared for the Co-Operative Insurance Companies of Middlebury, Vermont, and the Site owner is the Pigeon Family Living Trust

The Site includes a vacant residence and a former bus garage on approximately 3.3 acres of land, on the north side of Route 128, in the center of Westford. The buildings are currently unoccupied and are used for storage.

The Town of Westford is pursuing the acquisition of the Site, in order to replace the existing Town Offices, and to further develop the Site in a way that serves the community of Westford. Specifics of the redevelopment are still being developed; the vision is to provide new residential and non-residential growth that will stimulate the local economy, diversify the grand list, and provide new affordable housing options. The presence of grossly contaminated soil and groundwater in the vicinity of the former gasoline UST complicates the acquisition and redevelopment of the Site.

The objective of this Corrective Action Plan is to remove petroleum contaminated soil in the vicinity of the former gasoline underground storage tanks (USTs), which will reduce ongoing impacts to soil and groundwater in the vicinity of the garage.

DEC's required cleanup planning process as specified at I-Rule §35-601-611 includes an Evaluation of Corrective Action Alternatives (ECAA), followed by the CAP. The Site meets the requirements for exemption from the ECAA requirement in I Rule §35-604 (b) due to the following:

1. Environmental investigations have indicated there is no impact to drinking water or vapor intrusion at the Site.
2. Groundwater is impacted with petroleum contamination resulting from former leaking petroleum USTs. Monitoring has demonstrated the contaminant plume is confined to the property.
3. The removal of contaminated soil will remove direct contact threats to sensitive receptors in the vicinity of the former USTs. However, an ECAA and an additional CAP will be needed in the future to address soil PAH contamination concurrent with the redevelopment of the property.
4. The remedy of contaminated soil removal has been used at other sites and has been demonstrated to be reliable, cost effective, and effective.

2.0 SITE HISTORY AND UPDATED CONCEPTUAL SITE MODEL

The Site was developed prior to 1858. Historic Site use has included residential, with a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property. A building was noted on or near the northeastern property line on historic (1869 and 1915) maps. The building was gone by 1948. A tannery was noted on the adjoining property to the west in 1869.

LEE prepared a Phase I ESA report for the property in September 2019[1], and three Recognized Environmental Conditions (RECs) were identified during the Phase I ESA:

1. Historic use of the property for bus/automotive repair and as a gasoline filling station.
2. Possible presence of an abandoned UST.
3. Historic adjoining property use as a tannery.

A Phase II ESA was recommended to determine whether contamination is present on the Site due to the identified RECs. Subsequently, LEE conducted geophysical testing to locate an abandoned UST in 2019 and a Brownfields Phase II ESA in 2020.[2] The Phase II ESA included assessment of the soils around and below the abandoned gasoline UST, which necessitated its removal, soil boring advancement, groundwater monitoring well installation, soil sampling, groundwater sampling, and drinking water sampling.

In order to access the soils around and beneath it, the abandoned, 1,100-gallon, gasoline UST was removed from the Site on June 2, 2020. The UST was a relic of the former gasoline filling station that operated on the Site from circa 1940 through the mid 1980s. The age of the UST and piping is not known, but it appeared to be at least 80 years old. The UST was a single-walled tank, and piping from other former USTs was also encountered in the excavation. The piping for the removed UST appeared to have been cut near the former pump island, and had paper stuffed in the end. It was buried approximately 1.5' to 2' below grade (bg), and was found to be in failed condition upon removal, with extensive rust, pitting, and several large holes in the bottom of the UST. Groundwater was encountered at 6' bg in the excavation, and a sheen was noted on the groundwater.

[1] LE Environmental LLC, Phase I Environmental Site Assessment Report, September 23, 2019.
[2] LE Environmental LLC, Brownfields Phase II Environmental Site Assessment Report, Pigeon Property, July 24, 2020.

The photoionization detector (PID) readings ranged from 17.1 parts per million (ppm) in soil under the former dispenser island to 2,374 ppm at the top of the tank where piping (not attached to this tank) was found. PID readings ranging from 1,286 ppm to 1,644 ppm were observed under the UST, which was also where groundwater was encountered.

A pipe with unknown purpose was noted on the southern wall of the UST excavation. The excavation could not be extended in this direction due to the presence of Route 128 and special permitting; traffic control, and engineering would be required to dig in this area.

During the Phase II ESA the depth to water ranged from 4.45' bg in the southern portion of the Site to 11.59' bg in the northern portion of the Site. The overall groundwater flow beneath the Site appears to be northerly. The approximate hydraulic gradient is approximately 10% on the southern portion of the Site and 16% in the central and northern portions of the Site.

Groundwater was found to be impacted with petroleum related Volatile Organic Compounds (VOCs) during the Phase II ESA, at concentrations above the Vermont Groundwater Enforcement Standards (VGES) and above the vapor intrusion (VI) standards for groundwater in the vicinity of the former UST. The limits of the dissolved-phase groundwater contaminant plume were not defined by the Phase II ESA. The overall low permeability of the native soils implies the migration of the contaminant plume will be limited. The low permeability of the soils was evident during sampling, where very low recharge was noted in the groundwater monitoring wells. No VOCs were reported in the drinking water sample obtained during the Phase II ESA.

The Phase II ESA indicated that shallow and deep soils are impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in the parking area to the east. Shallow soils are impacted with Polycyclic Aromatic Hydrocarbons (PAHs) in the area to the north of the garage. The limits of the PAH contamination were not defined during the Phase II ESA.

A Supplemental Site Investigation was completed in 2021. A geophysical investigation was conducted to investigate the area around the suspect pipe noted on the southern edge of the previous UST excavation on November 24, 2020. No evidence of a pipe or additional USTs beneath Route 128 was noted during the geophysical investigation.

A confirmatory round of groundwater sampling was performed on December 3, 2020. The depth to water ranged from 2.86' below grade (bg) at MW-1 to 8.62' bg at MW-5. Concentrations of benzene, toluene, ethylbenzene, xylenes, trimethylbenzenes, and naphthalene in excess of the VGES were reported in the vicinity of the former UST location (MW-1). Ethylbenzene was reported in MW-2

below the VGES. No contaminant concentrations were reported above laboratory detection limits in MW-3, MW-4, or MW-5. A supply well sample was also obtained on December 3, 2020, and no VOCs were reported in the water supply sample.

Thirteen soil borings were advanced at the Site on December 21, 2020. Ten soil samples and a duplicate were obtained during drilling. Three additional groundwater monitoring wells, four soil gas wells, and two vapor pins were installed.

PAH toxicity equivalency quotient (TEQ) concentrations in excess of the DEC's Statewide Urban Background concentration were identified in five of the ten shallow soil samples obtained in this SSI (SB-102, SB-103, SB-104, SB-105, and SB-106). The northwestern, western, southern, and eastern limits of the PAH-impacted shallow soil were identified by the SSI sampling. However, the northern-most soil shallow soil samples contained PAH TEQ above the DEC's Statewide Urban Background concentration, indicating the extent of the contamination continues to the north some distance. The area of soils impacted is likely correlated to the historic storage of buses, auto parts, and other machinery in this area.

An additional round of groundwater sampling, including the three newly installed monitoring wells, was performed on January 7, 2021. The depth to water ranged from 2.09' bg at MW-7 to 10.27' bg at MW-5. Concentrations of MTBE, benzene, toluene, ethylbenzene, xylenes, trimethylbenzenes, and naphthalene in excess of the VGES were reported in MW-1. A naphthalene concentration in excess of the VGES was reported in MW-8. Concentrations of ethylbenzene and 1,3,5-trimethylbenzene below the VGES were reported in MW-2.

The northern, western, and southern portions of the groundwater contaminant plume have been defined. The eastern edge of the plume is not fully defined, but it likely terminates in the vicinity of MW-8 based on the fairly low concentration of naphthalene reported there.

Three soil gas, two sub-slab soil gas, and one outdoor ambient air sample were obtained on January 2, 2021. The soil gas samples were analyzed for the presence of VOCs via EPA Method TO-15. Several VOCs were reported in the soil gas samples including: benzene, carbon tetrachloride, ethylbenzene, methylene chloride, tetrachloroethene (PCE), acetone, ethanol, isopropanol, tetrahydrofuran, toluene, Freon 11, and xylenes. None of the reported concentrations exceeded DEC's residential VI standards.

A. Conceptual Site Model

The area immediately surrounding the Site is the town center of Westford, with closely spaced residential homes, a municipal office building, a public library, and a town common. The topography of the Site is fairly flat on its south side, near Route

128, and then slopes downward to the north, toward the Browns River. There is also a ravine on the eastern side of the Site, which contains an outlet drainage pipe for the town common's stormwater system. No odors or sheens have been noted on the water exiting the outlet pipe.

The Site was developed as of the earliest record located thus far (1858). The property use has included residential with a gasoline filling station and automotive and bus repair. According to the current owner, the gasoline tanks were no longer used after circa 1985. A small store was also once present on the southeastern portion of the Site. A tannery was present on the adjoining property to the west on an 1869 map. It is unknown how long the tannery operated.

The on-Site residence is heated with fuel oil. The garage is not currently heated but appears to have been heated with wood, propane, and/or fuel oil historically. The buildings are served by a private dug supply well and at least one septic system. The configuration and location of the septic system is not known.

Bedrock was not encountered in the Phase II ESA. According to the most recent geologic map of Vermont, the bedrock in the vicinity of the Site consists of Cambrian and Neoproterozoic aged schist in the Pinnacle formation and the overburden deposits in the area of the Site are mapped as boulders in clay.[3]

The Site is approximately 470 feet above current sea level on the southern portion of the Site and drops to approximately 435 feet above current sea level at the northern terminus of the parcel boundary. This area has undergone extensive deposition and erosional processes through recent glacial events. The retreat of the Laurentide Ice Sheet led to the formation of glacial Lake Vermont approximately 13,500 years ago. The elevation of the lake surface was approximately 620 feet above sea level, significantly higher than the elevation of the current Lake Champlain. Streams flowing off the melted glacier deposited many sediments, with larger sediments deposited near the front of the glacier and finer grained sediments deposited away from the front of the glacier. Clay and silt varves were deposited in the calmer portions of Lake Vermont.[4]

The data obtained from soil borings indicate the soils at the Site consist of an approximately 3' thick layer of sand with varying amounts of silt overlaying dense, native clay. The clay contained distinct sand layers in each boring, and distinct varves have been noted in several soil borings. This data suggests the Site was likely located in a calmer portion of Lake Vermont. Sand layers noted in the clay point to periods of higher energy deposition in the lake.

---

[3] ANR Atlas.
[4] S.F. Wright

The depth to groundwater at the Site varied between the three groundwater sampling events performed to date. Groundwater levels in December 2020 were 0.45' to 6.89' higher than those reported in June 2020. The groundwater levels in January 2021 were 0.38' to 4.67' lower than those reported in December 2020. The depth to water in January 2020 ranged from 2.09' bg at MW-7 to 10.27' bg at MW-5. Groundwater flow is generally toward the north and northeast. The hydraulic gradient in the southern portion of the Site has been calculated between 5 and 10%, while the hydraulic gradient on the central and northern portions of the Site has been calculated between 16 and 22%

The overall low permeability of the native soils implies the migration of the contaminant plume is limited, and it is not expected to travel off-Site. The low permeability of the soils was evident during sampling, where very low recharge has been noted in the groundwater monitoring wells. The sand layers noted during drilling are likely the mechanism for the migration of the low-level dissolved phase contamination away from the UST area.

Shallow and deep soils are impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in a portion of the parking area to the east. Shallow soils are impacted with PAHs in the area to the north and northeast of the garage. The limits of the shallow soil PAH contamination have been defined to the northwest, west, south, and east. The northern extent of the shallow soil PAH contamination has not been fully defined. However, the extent of the contamination likely correlates to the areas on the Site where buses, auto parts, and other machinery were previously stored.

Groundwater is impacted with petroleum related VOCs at concentrations above the VGES and the VI standards for groundwater in the vicinity of the former UST. The VGES exceedances are primarily limited to the former UST, with low-level contamination extended approximately 100' to the west, 50' to the north, and 75' to the east. The northern, southern, and western limits of the dissolved-phase contaminant plume were defined by this investigation. The eastern edge of the plume is not fully defined, but it likely terminates in the vicinity of MW-8 based on the fairly low concentration of naphthalene reported there.

Soil gas sampling results indicate several VOCs are present in the soil gas at the Site including: benzene, carbon tetrachloride, ethylbenzene, methylene chloride, tetrachloroethene (PCE), acetone, ethanol, isopropanol, tetrahydrofuran, toluene, Freon 11, and xylenes. None of the reported concentrations exceeded residential VI standards. The results suggest that while VOCs were detected in all of the soil gas samples obtained, since none of these concentrations exceeded residential VI standards, Site users are not likely to be impacted by these contaminants via vapor intrusion into the structures.

B. Potential Contamination Sources

The most apparent source(s) of contamination at the Site include the leaking gasoline UST removed in June 2020 (soil and groundwater), historic USTs (soil and groundwater), and historic use and storage of hazardous substances and petroleum products (shallow soil).

C. Potential Receptors

Potential receptors of contamination include Site users. Shallow soils are impacted with petroleum and PAHs at the Site. The limits of the dissolved-phase petroleum contamination plume have been fully defined by this assessment except in the vicinity of MW-8, which is the eastern-most monitoring well in the network. The northern limit of the shallow soil PAH contamination remains undefined, but the zone of contamination appears to be attributed to the previous bus and miscellaneous metal storage areas on the Site. The groundwater plume is not likely to be migrating off-Site due to the low permeability soils on the Site and the lack of contamination noted in the downgradient groundwater monitoring well. The Site is currently vacant and not used.

D. Utility Corridors

Buried underground utilities known to exist on or in the immediate vicinity of the Site include the water line from the well to the residence and garage, and the septic systems for the buildings. The Westford Common to the south of the Site has a series of drainage lines, which connect to a drainage culvert on the eastern portion of the Site. The drainage outfall has been inspected several times and no petroleum odors or sheens have been noted to date.

E. Water Bodies and Wetlands

The Browns River abuts the property on its northeast side and is approximately 450’ from the former UST location. There is also an unnamed tributary that runs through the western portion of the property, and this tributary is approximately 200 feet northwest of the former UST location. The ANR Natural Resources Atlas does not depict Vermont State Wetland Inventory (VSWI) or wetlands advisory areas on the Site. However, apparent wetland vegetation was noted on the northern portions of the Site. Based on the results of the investigation, surface water does not appear to be at risk.

F. Water Supplies

The Site and nearby properties are served by private wells. Approximately 28 water supply wells are depicted on the ANR Natural Resources Atlas within a quarter mile of the Site. The on-Site supply well was sampled and tested for VOCs twice, and no

detections of VOCs or exceedances of regulatory standards were noted. The data suggests off-Site supply wells are unlikely to be impacted from contamination at this Site.

G. Site Users

The Site is currently unoccupied and not being used except for storage by the owners of the property. Portions of the area have shallow soil contamination and future Site users could come into contact with this soil.

3.0 PUBLIC NOTICE

The following is a table summarizing the property and adjoining property owners. The adjoining property owners map in Appendix A depicts the locations of these properties.

Property Address	Span	Property Owner	Owner's Mailing Address
1705 Route 128 (Site)	720-229-10632	Pigeon Family Living Trust	1705 Route 128 Westford, VT 05494
1681 Route 128	720-229-10853	Classic Green LLC	1681 Route 128 Westford, VT 05494
2 Cambridge Rd	720-229-10827	Charlotte Vincent and Kathleen Sawyer*	2 Cambridge Rd Westford, VT 05494
18 Cambridge Rd	720-229-10823	Armando and Linell Vilaseca	18 Cambridge Rd Westford, VT 05494
4 Huntley Rd	720-229-10146	Clark Phoebe M Family Trust	4 Huntley Rd Westford, VT 05494
1729 Route 128	720-229-10236	Joel and Mary Fay	P.O. Box 70 Westford, VT 05494
1715 Route 128	720-229-10134	Mary Cavanaugh	48 Orchard Rd Maplewood, NJ 07040
1713 Route 128	720-229-10853	Town of Westford	1713 Route 128 Westford, VT 05494

*listed owners are deceased but they are still listed as the owners on the 2021 grandlist

4.0 PERFORMANCE STANDARDS

A. Corrective Action Objective

The removal of the grossly contaminated soil in the vicinity of the former USTs with off-Site soil disposal will help mitigate the impact of hazardous materials to sensitive receptors in accordance with the Corrective Action Objectives outlined in I-Rule Section 35-603.

B. Environmental Media Standards

Environmental media standards applicable to this Site include soil and groundwater quality standards. The concentrations reported in excess of relevant standards in the corrective action area are outlined in Table 4-1. Additional contamination is present in soil outside the UST area, which will be addressed under a separate CAP.

Table 4-1 Contaminant Concentrations in Excess of Regulatory Standards in the Corrective Action Area

Compound	Media	Concentrations	Relevant Residential Standard
Benzene	Soil	8.7 - 43 mg/kg	0.70 mg/kg
Ethylbenzene	Soil	150 mg/kg	3.7 mg/kg
Xylenes	Soil	980 mg/kg	252 mg/kg
Trimethylbenzenes	Soil	426 mg/kg	144 mg/kg
Naphthalene	Soil	7.6 – 54 mg/kg	2.7 mg/kg
MtBE	Groundwater	290 - 2,100 µg/L	11 µg/L
Benzene	Groundwater	5,900 - 14,000 µg/L	5 µg/L
Toluene	Groundwater	19,000 - 34,000 µg/L	1,000 µg/L
Ethylbenzene	Groundwater	2,500 - 3,900 µg/L	700 µg/L
Xylenes	Groundwater	14,500 - 19,000 µg/L	10,000 µg/L
Trimethylbenzenes	Groundwater	3,670 – 5,300 µg/L	23 µg/L
Naphthalene	Groundwater	640 – 710 µg/L	0.5 µg/L
Arsenic	Groundwater	0.017 µg/L	0.010 µg/L
Lead	Groundwater	0.12 µg/L	0.015 µg/L

C. Compliance Points

Compliance points will consist of confirmation soil samples and groundwater samples. Confirmation soil samples will be obtained from each sidewall and the bottom of the excavation. The soil samples will be submitted for laboratory analysis of VOCs via EPA Method 8260. A duplicate soil sample will also be obtained, for a total of six laboratory analytical soil samples.

Monitoring well MW-1 will be removed during the corrective action. A replacement groundwater monitoring well will be installed in the vicinity of the former UST (approximately where MW-1 is currently located) once the excavation is complete. Groundwater samples will be obtained from monitoring wells MW-2, MW-3, MW-6, MW-8, and from the replacement monitoring well (MW-1r). Groundwater samples will be submitted for analysis of Vermont List Petroleum VOCs via EPA method 8260, along with a duplicate and trip blank for QA/QC analysis.

D. Estimated Removal Rate and Duration

The quantity of soil to be excavated and removed from the Site is approximately 67 cubic yards (100 tons). The size and depth of the excavation is limited by Route

128, the garage, and the archaeologically sensitive location located to the east of the former UST. A plan showing the excavation location is located in Appendix A.

E. Substantial Completion Standards

Performance standards for demonstrating substantial completion of the work will be excavation and disposal of grossly contaminated soils and fill of the excavation area, installation of a new groundwater monitoring well, and a round of groundwater sampling.

F. Estimate Duration of Active Remediation

Cleanup is scheduled for the Summer/Fall of 2021. Site preparation, excavation, characterization sampling, soil removal and transport, confirmation sampling and testing, and re-grading of the Site is anticipated to take one month or less to complete. Replacement groundwater monitoring well installation and groundwater sampling will take an additional month to complete.

5.0 PERMITS

Approval of this CAP by the DEC will be required prior to construction. The Town of Westford has indicated that a local zoning permit will not be required for this cleanup. A Vermont Agency of Transportation Section 1111 permit will be required for the excavation, due to the location of the former UST in relation to Route 128.

6.0 REMEDIAL CONSTRUCTION PLAN

A. Plans and Specifications

Excavation of grossly contaminated soil in the vicinity of the UST, concurrent with off-Site disposal, is recommended to reduce soil and groundwater impacts in the vicinity of the former UST. The Excavation of Contaminated Soil Plan in Appendix A shows the proposed excavation location, which will be the basis for the cleanup.

Soils will be excavated and placed in a stockpile on the northern portion of the parking lot. Two characterization soil samples will be obtained for disposal facility acceptance from the stockpile. The characterization analytical suite includes the following:

- Volatile Organic Compounds (VOCs) via EPA Method 8260C
- Semi-Volatile Organic Compounds (SVOCs) via EPA Method 8270D
- RCRA 8 Metals (total and TCLP Extraction via EPA Method 1311)
- PCBs via EPA Method 8082 with Soxhlet extraction via EPA Method 3540C
- Ignitibility (solids) via Method 1010A
- pH via EPA Method 9045D

- Herbicides via EPA Method 8151A
- Pesticides via EPA Method 8081
- Total Petroleum Hydrocarbons (TPH) via EPA Method 8100
- Reactivity (Cn/S) via SW-846 9014 and 9030A

Once the characterization data is received, the contaminated soil will be transported to a licensed disposal facility (landfill), for disposal.

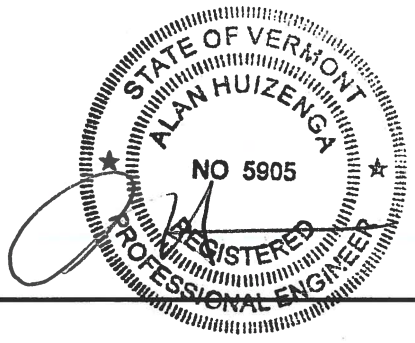
Confirmation soil samples will be obtained from each sidewall and the bottom of the excavation. The soil samples will be submitted for laboratory analysis of VOCs via EPA Method 8260. A duplicate soil sample will also be obtained, for a total of six laboratory analytical soil samples.

A new groundwater monitoring well will be installed in the vicinity of the former UST (approximately where MW-1 is currently located) once the excavation is complete using a geoprobe. Groundwater samples will be obtained from monitoring wells MW-2, MW-3, MW-6, MW-8, and from the replacement monitoring well (MW-1r). Groundwater samples will be submitted for analysis of Vermont List Petroleum VOCs via EPA method 8260, along with a duplicate and trip blank for QA/QC analysis.

The soil excavation and temporary stockpiling is estimated to take approximately 2 days. The laboratory turnaround time for the characterization samples is 2 weeks, and facility acceptance will take approximately 1 week. Loading and hauling will take approximately 1 week.

B. Vermont Licensed Professional Engineer's Signature of Review

I have reviewed this Corrective Action Plan for the Pigeon Property, 1705 Route 128, Westford, Vermont, State of Vermont Department of Environmental Conservation Sites Management Section #2019-4863, prepared by LE Environmental LLC on July 9, 2021.



Alan Huizenga, PE

7.0 WASTE MANAGEMENT PLAN

Approximately 67 cubic yards (100 tons) of petroleum contaminated soil will be excavated from the Site as shown on the "Excavation of Contaminated Soil" Plan in Appendix A. This soil will need to be disposed of at a licensed facility, and they will need to be characterized according to requirements of the receiving facility prior to their being accepted for disposal. The recommended strategy will be to collect characterization samples from the temporary soil stockpile as part of the cleanup. The results of soil testing available to date indicate that the soils to be excavated are not legally hazardous waste, nor are they TSCA regulated waste.

Temporary soil stockpiling shall conform to § 35-803 and Subchapter 8 of the I-Rule. The duration of stockpiling will be to allow time to collect characterization samples, received and compile the results, and make disposal facility arrangements. The contaminated soil will not be stockpiled for more than 90 days, and will not occur between December 1st and April 1st. Contaminated soil will be placed on and covered with a polyethylene liner, with a minimum thickness of 6 mils, during temporary staging. The liner will be inspected frequently for rips and any rips will be repaired immediately.

There are no sources for public water systems or potable water supplies within a 300-foot radius of the temporary stockpile location. There are no sensitive environments such as streams, rivers, lakes, ponds, state or federally listed threatened or endangered species or habitats, wetlands, floodplains, Class I or II groundwater, residences, or other similar areas within 100 feet of the temporary stockpiling area. A silt fence will be placed around the stockpile area. The temporary soil stockpile location is depicted on the Excavation of Contaminated Soil" Plan in Appendix A.

Generation of dust from the contaminated area will be addressed as follows to minimize the inhalation pathway during construction. All excavated surfaces will be wetted as needed to minimize dust. Calcium chloride may also be used to control dust on exposed excavation surfaces. The soils will be wetted before being direct loaded onto the transport vehicles and covered. Visible emissions of dust from the Site or from transport vehicles will not be permitted.

8.0 IMPLEMENTATION SCHEDULE

Procurement for a cleanup contractor can begin upon approval of this CAP by DEC. The following tasks will be required.

1. A Vermont Agency of Transportation Section 1111 permit will be required for the excavation, due to the location of the former UST in relation to Route 128.

2. A request for bids will be provided to a select group of local contactors. Bid periods normally run 3-4 weeks.
3. Designation of low bidder, selection, qualification requirements, and contracting will follow. This process normally takes 2-4 weeks to complete.
4. Mobilization and construction will take place a contractor is selected and when weather conditions allow. LEE estimates that the mobilization and construction will 4 weeks to complete.
5. Monitoring well installation and sampling will take 2 weeks to complete.
6. Completion Reporting will take place following completion of soil removal and groundwater sampling.

Table 8-1 illustrates the projected schedule for completion of the cleanup work.

Task	Month						
	July 21	Aug 21	Sept 21	Oct 21	Nov 21	Dec 21	Jan 22
CAP Submittal							
DEC Review and Public Comment Period							
Obtain VTRANS Section 1111 Permit							
Bid Package Preparation							
Contractor Bid Period							
Contractor Selection and Contracting							
Construction							
Monitoring Well Installation and Sampling							
Completion Reporting							

9.0 CORRECTIVE ACTION OPERATION AND MAINTENANCE PLAN

No operation and maintenance requirements are anticipated for the petroleum contaminated soil excavation once the work is completed. Residual contaminated material remaining on Site will need to be remediated via a separate CAP once the redevelopment plan for the property is solidified. An operation and maintenance plan will be developed at that time.

10.0 INSTITUTIONAL CONTROL PLAN

Pursuant to §35-901(b) of the I-Rule, an institutional control plan is required for this property. The institutional control plan will be created once the remainder of

the contamination on the Site is addressed, via a separate Corrective Action Plan, once redevelopment plans are solidified.

11.0 LONG TERM MONITORING PLAN

Additional groundwater monitoring in the future may be required and is dependent on the results of this soil removal effort. LEE will make a recommendation in the completion report once the results from the proposed groundwater sampling are tabulated. Long-term monitoring may be required for future remedial structures such as protective soil or impervious caps on the remainder of the contamination on the Site (soils with PAHs), which will be addressed via a separate Corrective Action Plan, once redevelopment plans are solidified.

12.0 REDEVELOPMENT AND REUSE PLAN

Continuing use of the property as-is will continue for the near future. Redevelopment plans are being solidified by the stakeholders and these will be incorporated into a separate future Corrective Action Plan.

13.0 QUALITY ASSURANCE AND QUALITY CONTROL PLAN

Specified testing will include landfill characterization sampling of soil to be excavated and disposed to verify that it meets disposal facility acceptance criteria, and confirmation soil sampling of the sidewalls and bottom of the excavation. A round of groundwater sampling will also be performed. A duplicate soil sample will be obtained during confirmation sampling, and a duplicate groundwater sample will be obtained during groundwater monitoring. Trip blanks will also brought into the field during soil and groundwater sampling and analyzed for VOCs to ensure cross-contamination has not occurred. Sample collection will be via LEE Standard Operating Procedures. Normal laboratory procedures consistent with EPA Methodologies will be utilized.

14.0 COST ESTIMATE

The current estimate for the cleanup work described in this CAP is $43,886. This estimate was generated using common contractor charges for mobilization, erosion control, waste excavation, transport and disposal costs estimates, and an allowance for cleanup oversight. A cost estimate is in Appendix C.

15.0 UPDATED MAPS

The Excavation of Contaminated Soil Plan is in Appendix A.

16.0 CONTAMINATION CONCENTRATION SUMMARIES

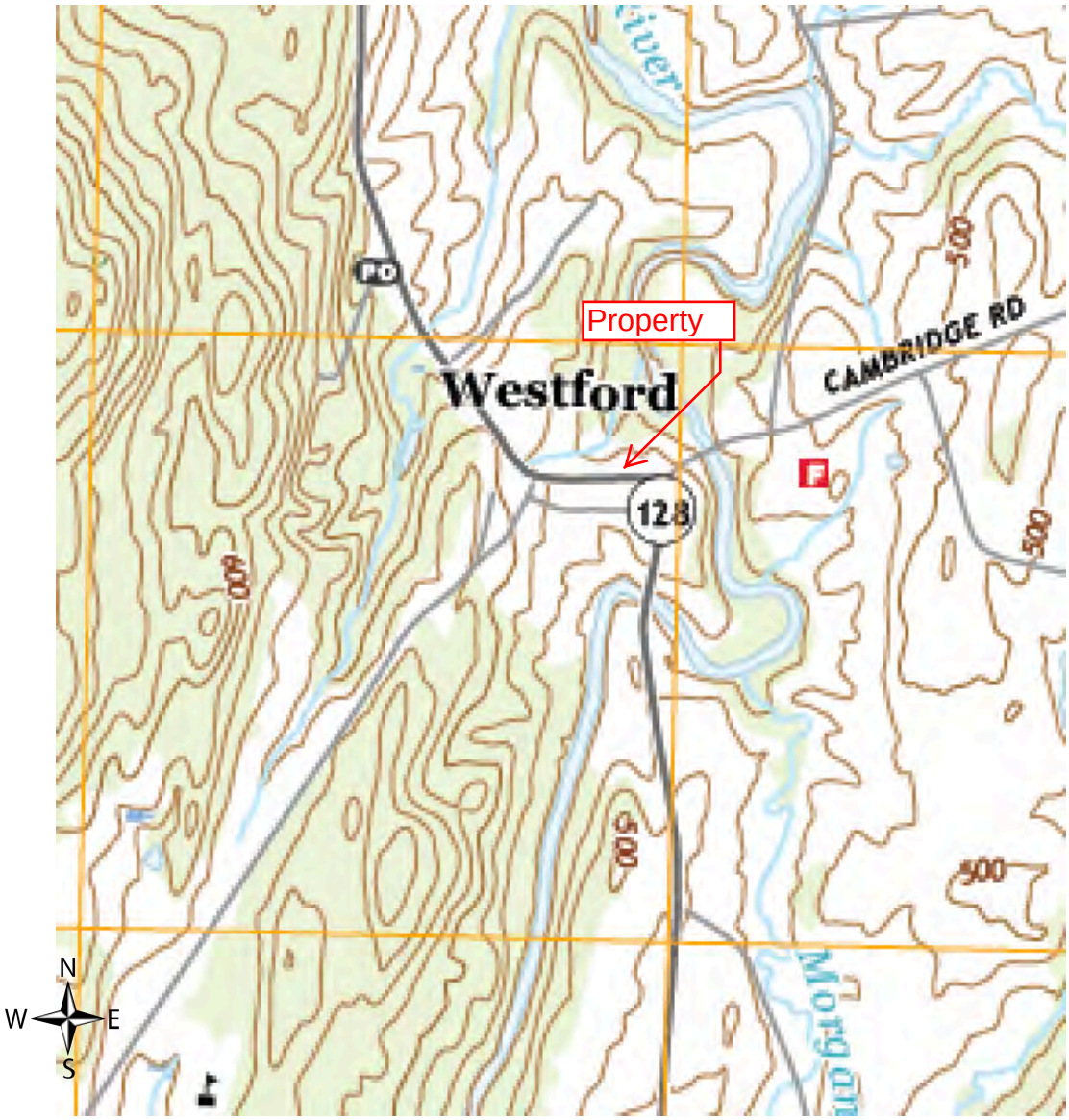
Executive summaries and contamination concentration summaries from the Phase II ESA and the Supplemental Site Investigation are included in Appendix B.

17.0 CONTRACTOR LIST

Due to the contaminated soil present on the Site a contractor with Hazardous Sites Training according to OSHA, 29 CFR 1910.120 must perform the excavation and soil disposal work. A request for bids will be sent to a select group of local contractors for competitive bids as described in Section 8.

APPENDIX A

MAPS
Site Location Map
ANR Atlas Map
Site Map
Excavation of Contaminated Soil Plan
Adjoining Property Owners Map
Archeologically Sensitive Area Map



1705 Route 128
Westford, Vermont

LE·Environmental

Site Location Map

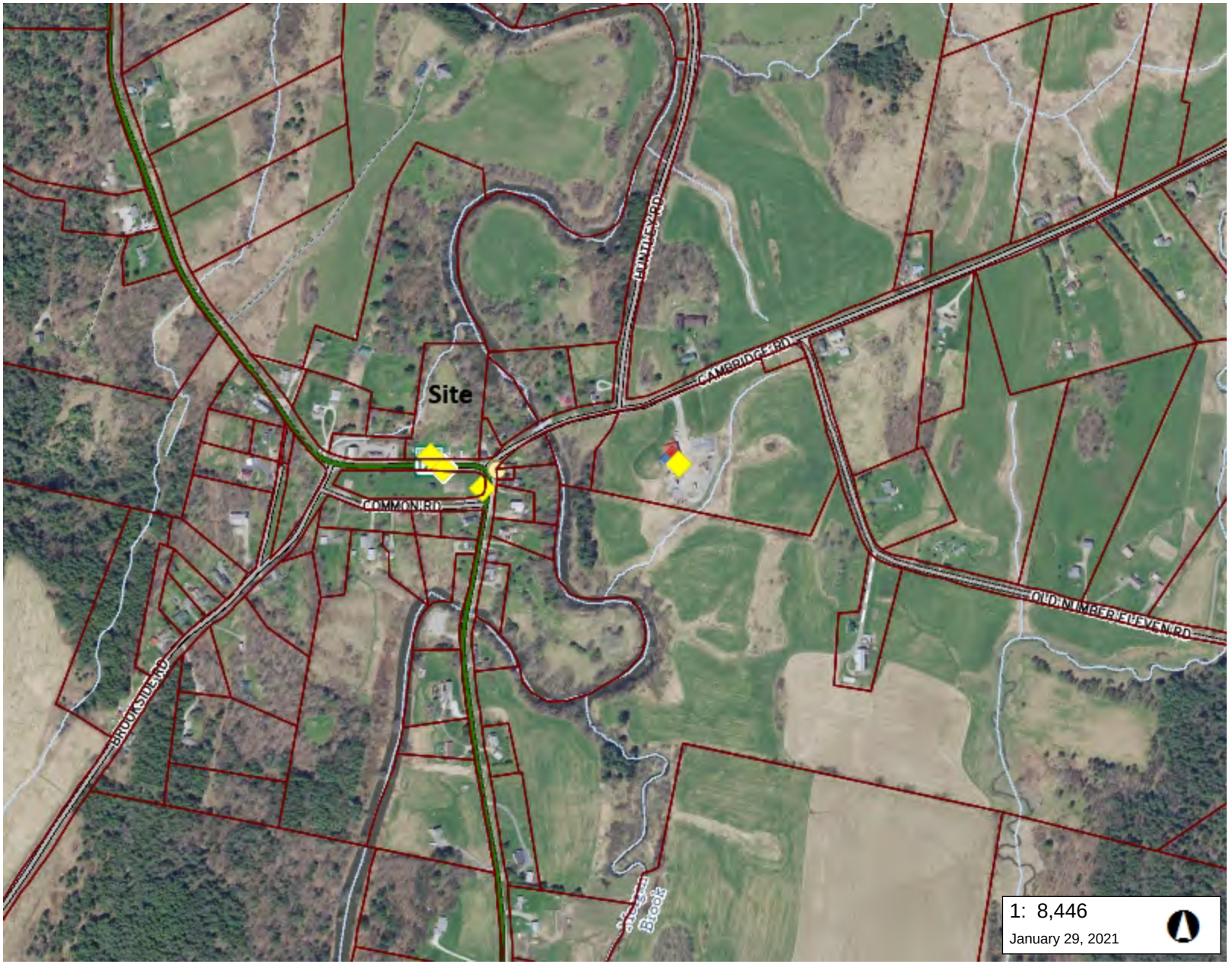
LEE# 19-139
Date: September 6, 2019
Source: USGS Store

VERMONT

Pigeon Property

Vermont Agency of Natural Resources

vermont.gov



LEGEND

PFAS Results (Waste Manage
- Hazsite, Non-Detect
- Hazsite, Below Standard
- Hazsite, Detected-No Standards
- Hazsite, Above Standard
- Residuals, Non-Detect
- Residuals, Below Standard
- Residuals, Detected-No Standards
- Residuals, Above Standard
- Solid Waste, Non-Detect
- Solid Waste, Below Standard
- Solid Waste, Detected-No Standarc
- Solid Waste, Above Standard
- Waste Water, Non Detect
- Waste Water, Below Standard
- Waste Water, Detected-No Standar
- Waste Water, Above Standard

Hazardous Site
Hazardous Waste Generators
Brownfields
Salvage Yard
Aboveground Storage Tank
Underground Storage Tank (w
Dry Cleaner
Parcels (standardized)
Roads
- Interstate

NOTES

Map created using ANR's Natural Resources Atlas

429.0 0 214.00 429.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 704 Ft. 1cm = 84 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

LEE
LE·Environmental
21 North Main Street Unit #1
Waterbury, Vermont
Phone: 802-917-2001
www.leenv.net

Site Map
Pigeon Property
1705 Route 128
Westford, Vermont

Legend
- Soil Boring
- Monitoring Well
- Soil Gas Well
- Sub-Slab Vapor Pin
- Supply Well
- Drain Line
- Former Gas UST

Drawing Date: 2/1/21
LEE Project #: 19-138

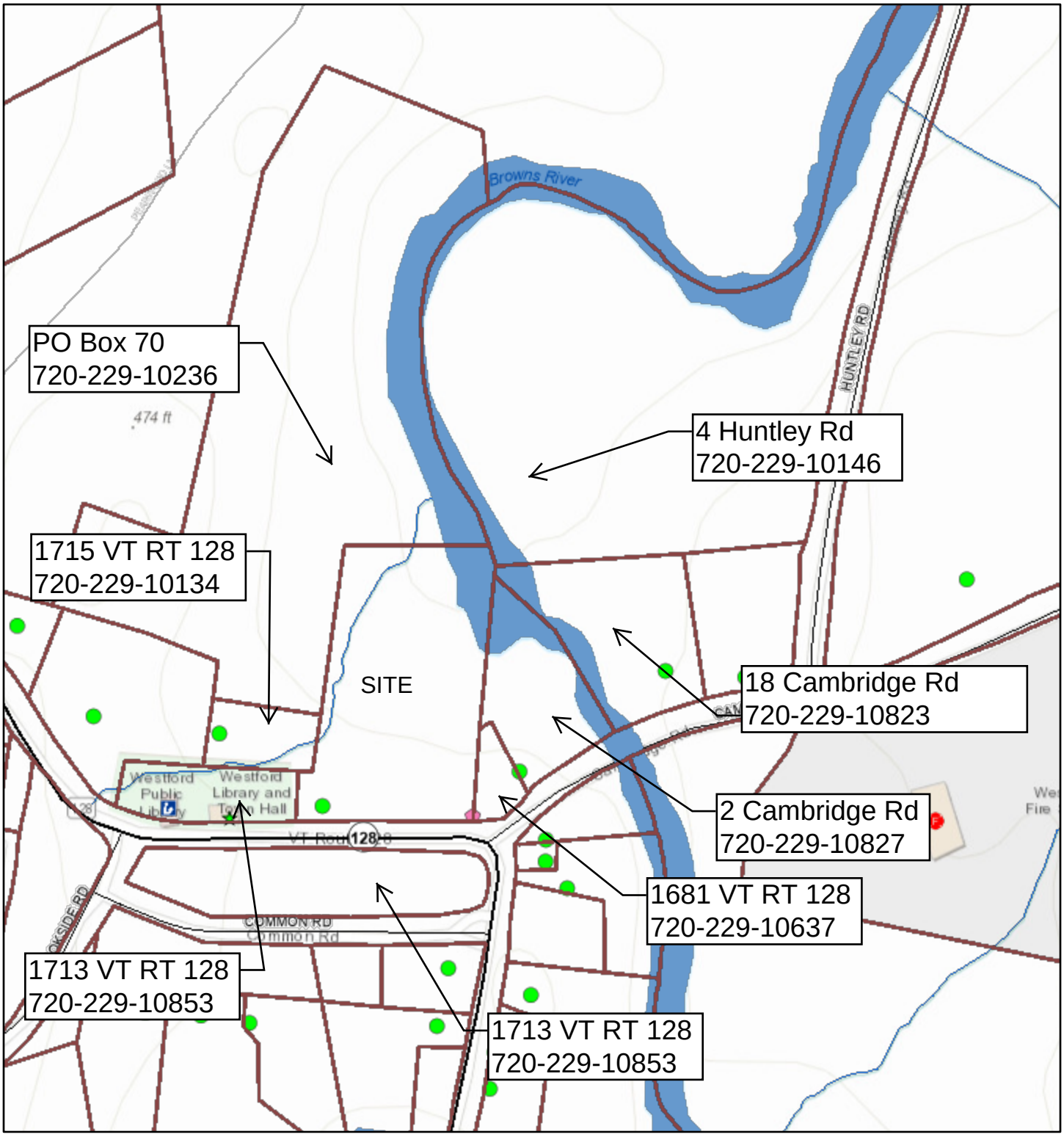
LEE
LE·Environmental
21 North Main Street Unit #1
Waterbury, Vermont
Phone: 802-917-2001
www.leenv.net

Excavation of Contaminated Soil Plan
Pigeon Property
1705 Route 128
Westford, Vermont

Legend
- Previous Soil Boring
- Existing Monitoring Well
- Former Gasoline UST
- Proposed Excavation
- Historically Sensitive Area

Drawing Date: 6/29/21
LEE Project #: 19-138

ADJOINING PROPERTY OWNERS MAP
Westford, Vermont



6/8/2021, 1:49:38 PM

1:4,514

0 0.03 0.06 0.11 mi

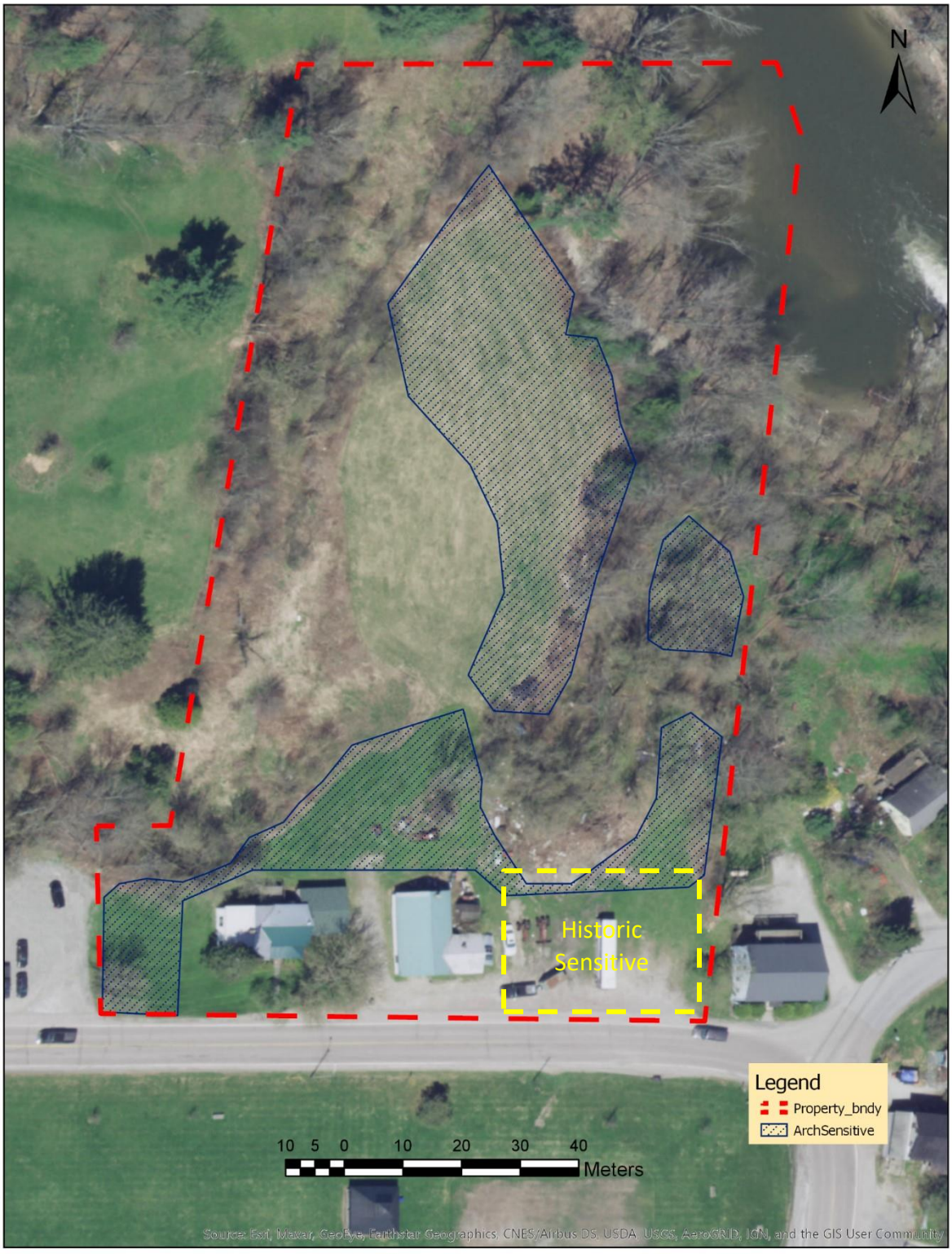
0 0.04 0.09 0.17 km

Housing Points
- Multi-Family
- Single Family
- Tax Parcel Boundary
- River or Stream Centerline

Road Centerline
- State Highway
- Class 2 or 3
- Private

Community and Social Points of Interest
- Fire Department
- Library

Chittenden County RPC, VCGI, Esri Canada, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA


N
Historic
Sensitive
Legend
Property_bndy
ArchSensitive
10 5 0 10 20 30 40
Meters
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

APPENDIX B

Phase II ESA and Supplemental Site Investigation
Executive Summaries and Contaminant Summaries

Brownfields Phase II ESA Report
Pigeon Property
1705 Route 128
Westford, Vermont

DEC SMS#2019-4863, EPA RFA 19093

July 24, 2020

Prepared for:

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404

LE·Environmental

21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net

LEE #19-138

Contents

1.0 EXECUTIVE SUMMARY

LE Environmental LLC (LEE) conducted a Brownfields Phase II Environmental Site Assessment (ESA) at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The ESA was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated February 25, 2020, approved March 6, 2020, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC). This work is supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

The Site includes a vacant residence and a former bus repair garage and gasoline filling station on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858, and historic Site use has include residential, a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property, and a tannery was noted on the adjoining property to the west in 1869.

The Site is located on the north side of Route 128. The area immediately surrounding the Site is the town center of Westford, with closely spaced residential homes, a municipal office building, a public library, and a town common. The DEC indicates that the Site is in a designated “urban background” zone for soil contamination. The topography of the Site is fairly flat on its south side, near Route 128, and then slopes downward to the north, toward the Browns River. There is also a ravine on the eastern side of the Site, which contains an outlet drainage pipe for the town common’s stormwater system. No odors or sheens were noted on the water exiting the outlet pipe. Portions of the northern and eastern ends of the property appear to have wetland vegetation.

Three structures are currently present on the property. The residence is a two-story, wood framed structure with a full basement. The garage is a single-story, wood framed structure, with a slab on-grade foundation. The third building is a small wood framed shed.

LEE prepared a Phase I Environmental Site Assessment (ESA) report for the property in September 2019, and three Recognized Environmental Conditions (RECs) were identified during the Phase I ESA:

1. Historic use of the property for bus/automotive repair and as a gasoline filling station.

2. Possible presence of an abandoned underground storage tank (UST).
3. Historic adjoining property use as a tannery.

A Phase II ESA was recommended to determine whether contamination is present on the Site due to the identified RECs.

This Phase II ESA included removal of the abandoned gasoline UST, soil boring advancement, groundwater monitoring well installation, soil sampling, groundwater sampling, and drinking water sampling. Soils are the Site consist of sand with varying amounts of silty overlaying dense, native clay. The clay contained distinct sand layers in each boring.

An abandoned, 1,100-gallon, gasoline UST at the Site was removed from the Site on June 2, 2020. The UST was a relic of the former gasoline filling station that operated on the Site from circa 1940 through the mid 1980s. The age of the UST and piping is not known, but it appeared to be at least 80 years old. The UST was a single-walled tank, and piping from other former USTs was also encountered in the excavation. The piping for the removed UST appeared to have been cut near the former pump island, and had paper stuffed in the end. It was buried approximately 1.5' to 2' below grade, and was found to be in failed condition upon removal, with extensive rust, pitting, and several large holes in the bottom of the UST. Groundwater was encountered at 6' below grade in the excavation, and a sheen was noted on the groundwater.

The photoionization detector PID readings ranged from 17.1 parts per million (ppm) in soil under the former dispenser island to 2,374 ppm at the top of the tank where piping (not attached to this tank) was found. PID readings ranging from 1,286 ppm to 1644 ppm were observed under the UST, which was also where groundwater was encountered.

A pipe with unknown purpose was noted on the southern wall of the UST excavation. The excavation could not be extended in this direction due to the presence of Route 128 and special permitting, traffic control and engineering would be required to dig in this area.

The depth to water ranged from 4.45' below grade in the southern portion of the Site to 11.59' below grade in the northern portion of the Site. The overall groundwater flow beneath the Site appears to be northerly. The approximate hydraulic gradient is approximately 10% on the southern portion of the Site and 16% in the central and northern portions of the Site.

Groundwater is impacted with petroleum related Volatile Organic Compounds (VOCs) at concentrations above the Vermont Groundwater Enforcement Standards (VGES) and above the vapor intrusion standards for groundwater in the vicinity of the former UST, and the plume extends northerly at least 200 feet. The limits of the

dissolved-phase contaminant plume were not defined by this investigation. The overall low permeability of the native soils implies the migration of the contaminant plume will be limited. The low permeability of the soils was evident during sampling, where very low recharge was noted in the groundwater monitoring wells.

Shallow and deep soils are impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in the parking area to the east. Shallow soils are impacted with Polycyclic Aromatic Hydrocarbons (PAHs) in the area to the north of the garage. The limits of the contamination were not defined by this investigation.

No VOCs were reported in the drinking water sample obtained during this Phase II ESA.

LEE has developed the following recommendations during this Phase II ESA.

Additional delineation of soil and groundwater contamination should be completed. Additional groundwater sampling of the existing groundwater monitoring wells should be performed prior to delineation. A soil vapor investigation should be performed to ensure the contamination detected is not impacting the indoor air quality in the residence and garage. In addition, soil vapor should be investigated in areas slated for redevelopment. A suspect pipe near Route 128 should be investigated via a geophysical investigation in the roadway.

Once delineation is completed, an evaluation of corrective action alternatives (ECAA) and a corrective action plan (CAP) could be prepared per the requirements of Subchapter 6 of the DEC's I-Rule.

2.0 SITE INFORMATION

LE Environmental LLC (LEE) conducted a Brownfields Phase II Environmental Site Assessment (ESA) at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The ESA was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated February 25, 2020, approved March 6, 2020, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC). This work is supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

Appendix E

Laboratory Analytical Results

Liquid Level Monitoring Data
Brownfields Phase II ESA
Pigeon Property
1705 Route 128
Westford, Vermont

Measurement Date: June 17, 2020

Well I.D.	Top of Casing Elevation	Depth To Product btoc	Depth To Water btoc	Product Thickness	Specific Gravity Of Product	Water Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	99.22	-	4.45	-	-	-	-	94.77
MW-2	99.74	-	6.26	-	-	-	-	93.48
MW-3	99.03	-	11.59	-	-	-	-	87.44
MW-4	98.68	-	11.07	-	-	-	-	87.61
MW-5	81.18	-	10.97	-	-	-	-	70.21

Notes:
All Values Reported in Feet
btoc - Below Top of Casing
Elevation data relative to 100' at SE corner of garage

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 1 of 11

Sample Identification	UST-1	Dup UST-1	SB-1	SB-2S	SB-2D	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	6	6	0-1.5	0-1.5	13-15	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10				
PID Reading (ppm)	1,644	1,644	0.2	193.0	1,392	1.8	39.4	2.7	1.3	0.3	2.7				
Sample Date	6/2/20	6/2/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20				
VOCs, EPA Method 8260C (mg/kg)															
Dichlorodifluoromethane	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	87	370	-	-
Chloromethane	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	110	460	-	-
Vinyl Chloride	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.03	-	-	0.10	0.59
Bromomethane	ND<0.2	ND<0.2	ND<0.1	ND<0.2	ND<0.1	ND<0.2	ND<0.2	ND<0.1	ND<0.2	ND<0.2	ND<0.1	6.8	30	-	-
Chloroethane (ethyl chloride)	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	14,000	57,000	-	-
Trichlorofluoromethane	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	23,000	350,000	-	-
Diethyl Ether	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.7	-	-	-	-
Acetone	ND<3	ND<2	ND<2	ND<2	ND<3	ND<2	ND<2	ND<2	ND<2	ND<2	ND<3	-	-	40,609	100,028
1 ,1-Dichloroethene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	230	1,000	-	-
Methylene chloride	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	57	1,000	-	-
Carbon disulfide	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	-	-	608	662
MTBE	ND<0.1	ND<0.1	ND<0.1	ND<0.1	**1.8**	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	-	-	649	4,464
trans-1,2-Dichloroethene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	1,402	18,137
1,1-Dichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	2.1	13
2,2-Dichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
cis-1,2-Dichloroethene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	140	1,814
2-Butanone (MEK)	ND<0.6	ND<0.6	ND<0.6	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.7	-	-	16,952	26,991
Bromochloromethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	193	597
Tetrahydrofuran(THF)	ND<0.6	ND<0.6	ND<0.6	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.7	-	-	-	-
Chloroform	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.32	1.4	-	-
1,1,1-Trichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	8,100	36,000	-	-
Carbon tetrachloride	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.37	2.2
1 ,1-Dichloropropene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
Benzene	**43**	**32**	ND<0.06	ND<0.05	**8.7**	ND<0.05	**0.079**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.70	4.2
1,2-Dichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.29	1.7
Trichloroethene (TCE)	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.68	6.5
1,2-Dichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	1.5	9.1
Dibromomethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	24	99	-	-
Bromodichloromethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.29	1.3	-	-
4-Methyl-2-pentanone(MIBK)	ND<0.6	ND<0.6	ND<0.6	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.6	ND<0.5	ND<0.5	ND<0.7	33,000	140,000	-	-
cis-1,3-Dichloropropene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.8	8.2	-	-
Toluene	**610**	**520**	ND<0.06	ND<0.05	**63**	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	706	798
trans-1,3-Dichloropropene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.6	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.8	8.2	-	-
1,1,2-Trichloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.1	5	-	-
2-Hexanone	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	200	1,300	-	-
Tetrachloroethene (PCE)	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07			2.4	14
1,3-Dichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,600	23,000	-	-
Dibromochloromethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	8.3	39	-	-
1,2-Dibromoethane(EDB)	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.03	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.03	-	-	0.02	0.14
Chlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	414	726

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Blank Cell=no published value (VSS) or published value not applicable (RSL)

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary

LE Environmental

Sample Identification	UST-1	Dup UST-1	SB-1	SB-2S	SB-2D	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	6	6	0-1.5	0-1.5	13-15	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10				
PID Reading (ppm)	1,644	1,644	0.2	193.0	1,392	1.8	39.4	2.7	1.3	0.3	2.7				
Sample Date	6/2/20	6/2/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20				
VOCs, EPA Method 8260C (mg/kg) (continued)															
1,1,1,2-Tetrachloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	2	8.8	-	-
Ethylbenzene	**150**	**120**	ND<0.06	ND<0.05	**22**	ND<0.05	**0.20**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	3.7	22
mp-Xylene	**700**	**620**	ND<0.06	ND<0.05	**82**	ND<0.05	**0.22**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	252	257
o-Xylene	**280**	**250**	ND<0.06	ND<0.05	**32**	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-		
Styrene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	6,000	35,000	-	-
Bromoform	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	19	86	-	-
IsoPropylbenzene (cumene)	**14**	**16**	ND<0.06	ND<0.05	**2.4**	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	p	264
Bromobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	290	1,800	-	-
1,1,2,2-Tetrachloroethane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.6	2.7	-	-
1,2,3-Trichloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	0.00311	0.07
n-Propylbenzene	**46**	**37**	ND<0.06	ND<0.05	**7.3**	ND<0.05	**0.11**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	253	261
2-Chlorotoluene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,600	23,000	-	-
4-Chlorotoluene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,600	23,000	-	-
1,3,5-trimethylbenzene	**86**	**70**	ND<0.06	ND<0.05	**14**	ND<0.05	**0.39**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	144*	177*
tert-Butylbenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	7,009	102,200
1,2,4-trimethylbenzene	**340**	**330**	ND<0.06	ND<0.05	**53**	ND<0.05	**1.0**	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	144*	177*
sec-Butylbenzene	**4.7**	**4.8**	ND<0.06	ND<0.05	**0.77**	ND<0.05	ND<0.05	**0.13**	ND<0.05	ND<0.05	ND<0.07	-	-	7,009	102,200
1,3-Dichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
p-Isopropyltoluene (p-cymene)	**2.6**	**2.7**	ND<0.06	ND<0.05	**0.52**	ND<0.05	ND<0.05	**0.098**	ND<0.05	ND<0.05	ND<0.07	-	-	-	-
1,4-Dichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	2.6	11	-	-
1,2-Dichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1,800	9,300	-	-
n-Butylbenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	-	-	3,504	51,100
1,2-Dibromo-3-chloropropane	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	0.0053	0.064	-	-
1,2,4-Trichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	24	110	-	-
Hexachlorobutadiene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	1.2	5.3	-	-
Naphthalene	**54**	**43**	ND<0.1	ND<0.1	**7.6**	ND<0.1	**0.19**	ND<0.1	ND<0.1	ND<0.1	ND<0.01	-	-	2.7	16
1,2,3-Trichlorobenzene	ND<0.06	ND<0.06	ND<0.06	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.06	ND<0.05	ND<0.05	ND<0.07	63	930	-	-

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) from May 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)
* Standard for 1,3,5 and 1,2,4 TMB

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 3 of 11

LE Environmental

Sample Identification	UST-1	Dup UST-1	SB-1	SB-2S	SB-2D	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	6	6	0-1.5	0-1.5	13-15	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10				
PID Reading (ppm)	1,644	1,644	0.2	193.0	1,392	1.8	39.4	2.7	1.3	0.3	2.7				
Sample Date	6/2/20	6/2/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20				
PAH EPA Method 8270D (mg/kg)															
Naphthalene	**3.5**	**3.4**	ND<0.009	**0.012**	**0.018**	ND<0.008	**0.012**	ND<0.009	**0.045**	**0.024**	ND<0.009	-	-	2.7	16
2-Methylnaphthalene	**2.6**	**2.5**	ND<0.009	**0.0082**	**0.013**	ND<0.008	**0.0094**	ND<0.009	**0.019**	**0.0092**	ND<0.009	240	3,000	-	-
1-Methylnaphthalene	**1.2**	**1.2**	ND<0.009	ND<0.007	ND<0.01	ND<0.008	**0.0094**	ND<0.009	**0.017**	ND<0.008	ND<0.009	18	73	-	-
Acenaphthylene	**0.042**	**0.036**	ND<0.009	**0.044**	ND<0.01	**0.017**	**0.038**	ND<0.009	**0.37**	**0.23**	ND<0.009	-	-	-	-
Acenaphthene	**0.011**	**0.010**	ND<0.009	ND<0.007	ND<0.01	ND<0.008	ND<0.008	ND<0.009	**0.021**	**0.011**	ND<0.009	3,600	45,000	-	-
Fluorene	**0.028**	**0.026**	ND<0.009	ND<0.007	ND<0.01	ND<0.008	ND<0.008	ND<0.009	**0.11**	**0.051**	ND<0.009	-	-	2,301	26,371
Phenanthrene	**0.066**	**0.061**	ND<0.009	**0.10**	ND<0.01	**0.049**	**0.013**	ND<0.009	**1.0**	**0.47**	ND<0.009	-	-	-	-
Anthracene	**0.016**	**0.015**	ND<0.009	**0.031**	ND<0.01	**0.011**	**0.012**	ND<0.009	**0.26**	**0.12**	ND<0.009	18,000	230,000	-	-
Fluoranthene	**0.079**	**0.079**	ND<0.009	**0.28**	ND<0.01	**0.10**	**0.082**	**0.0090**	**2.2**	**1.4**	**0.011**	-	-	2,301	26,371
Pyrene	**0.082**	**0.084**	ND<0.009	**0.26**	ND<0.01	**0.10**	**0.12**	ND<0.009	**2.2**	**1.5**	ND<0.009	1,800	23,000	-	-
Benzo(a)anthracene	**0.041**	**0.041**	ND<0.009	**0.15**	ND<0.01	**0.052**	**0.033**	ND<0.009	**1.4**	**0.97**	ND<0.009	1.1	21	-	-
Chrysene	**0.047**	**0.046**	ND<0.009	**0.16**	ND<0.01	**0.058**	**0.039**	ND<0.009	**1.4**	**1.0**	ND<0.009	110	2,100	-	-
Benzo(b)fluoranthene	**0.087**	**0.083**	ND<0.009	**0.23**	ND<0.01	**0.084**	**0.15**	ND<0.009	**2.2**	**1.5**	ND<0.009	1.1	21	-	-
Benzo(k)fluoranthene	**0.033**	**0.031**	ND<0.009	**0.075**	ND<0.01	**0.027**	**0.051**	ND<0.009	**0.76**	**0.56**	ND<0.009	11	210	-	-
Benzo(a)pyrene	**0.067**	**0.064**	ND<0.009	**0.16**	ND<0.01	**0.065**	**0.12**	ND<0.009	**1.9**	**1.3**	ND<0.009	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	**0.066**	**0.059**	ND<0.009	**0.097**	ND<0.01	**0.048**	**0.090**	ND<0.009	**1.0**	**0.74**	ND<0.009	1.1	21	-	-
Dibenz(a,h)anthracene	**0.013**	**0.012**	ND<0.009	**0.019**	ND<0.01	**0.0094**	**0.019**	ND<0.009	**0.24**	**0.16**	ND<0.009	0.11	2.1	-	-
Benzo(g,h,i)perylene	**0.068**	**0.061**	ND<0.009	**0.087**	ND<0.01	**0.045**	**0.087**	ND<0.009	**0.84**	**0.62**	ND<0.009	-	-	-	-
Total Reported PAHs	**8.0**	**7.8**	ND	**1.71**	**0.031**	**0.67**	**0.88**	**0.0090**	**16.0**	**10.7**	**0.011**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.1**	**0.1**	**0.010**	**0.23**	**0.012**	**0.093**	**0.17**	**0.010**	**2.6**	**1.8**	**0.010**	-	-		0.58 (urban bkgd)
TOTAL METALS, EPA Method 6020 (mg/kg, dry)															
Total Arsenic	**8.4**	**6.9**	**4.1**	**3.1**	**8.6**	**6.0**	**2.7**	**6.4**	**5.4**	**4.0**	**6.9**	-	-	16	16
Total Barium	**130**	**140**	**110**	**65**	**140**	**43**	**21**	**140**	**82**	**56**	**140**	-	-	11,247	127,382
Total Cadmium	**0.56**	**0.52**	ND<0.5	**2.0**	ND<0.5	**65**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	6.9	87
Total Chromium	**39**	**42**	**34**	**23**	**39**	**36**	**11**	**35**	**23**	**15**	**39**	-	-	40,223	360,223
Total Lead	**68**	**56**	**12**	**150**	**16**	**45**	**15**	**14**	**24**	**26**	**18**	-	-	400	800
Total Mercury	**0.11**	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	ND<0.1	-	-	3.1	3.1
Total Selenium	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	390	5,800	-	-
Total Silver	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-	237	2,483
TPH (mg/kg, dry)															
TPH	**170**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	-	-	-	-

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) fromMay 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)

Brownfields Phase II Environmental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 4 of 11

Sample Identification	SB-1	SB-2S	SB-4S	SB-4D	SB-5	SB-6	SB-7	Dup SB-5	*EPA Residential*	*EPA Industrial*	*VSS Residential*
Sample Depth (ft. bg)	0-1.5	0-1.5	0-1.5	9-11	9-10	0-1.5	0-1.5	9-10	*RSL (mg/kg)*	*RSL (mg/kg)*	*(mg/kg)*
PID Reading (ppm)	0.2	193.0	1.8	39.4	2.7	1.3	0.3	2.7			
Sample Date	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20	6/5/20			
PCBs, EPA Method 8082 (mg/kg)											
Aroclor - 1016	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	4.1	27	NA
Aroclor - 1221	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.2	0.83	NA
Aroclor - 1232	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.17	0.72	NA
Aroclor - 1242	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.23	0.95	NA
Aroclor - 1248	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.23	0.94	NA
Aroclor - 1254	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	NA	0.97	0.12
Aroclor - 1260	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	0.24	0.99	NA
Aroclor - 1262	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	NA	NA	NA
Aroclor - 1268	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	ND<0.02	NA	NA	NA
Total PCBs	ND	ND	ND	ND	ND	ND	ND	ND	-	-	0.114

Toxic Equivalency Calculations
Pigeon Property

LE Environmental

UST-1

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.041**	0.1	0.0041
Chrysene	**0.047**	0.001	0.000047
Benzo(b)fluoranthene	**0.087**	0.1	0.0087
Benzo(k)fluoranthene	**0.033**	0.01	0.00033
Benzo(a)pyrene	**0.067**	1	0.067
Indeno(1,2,3-cd)pyrene	**0.066**	0.1	0.0066
Dibenz(a,h)anthracene	**0.013**	1	0.013
		Total Benzo(a)pyrene Equivalent =	**0.100**

DUP UST-1

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.041**	0.1	0.0041
Chrysene	**0.046**	0.001	0.000046
Benzo(b)fluoranthene	**0.083**	0.1	0.0083
Benzo(k)fluoranthene	**0.031**	0.01	0.00031
Benzo(a)pyrene	**0.064**	1	0.064
Indeno(1,2,3-cd)pyrene	**0.059**	0.1	0.0059
Dibenz(a,h)anthracene	**0.012**	1	0.012
		Total Benzo(a)pyrene Equivalent =	**0.095**

SB-1

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.009	0.1	0.00045
Chrysene	ND<0.009	0.001	0.0000045
Benzo(b)fluoranthene	ND<0.009	0.1	0.00045
Benzo(k)fluoranthene	ND<0.009	0.01	0.000045
Benzo(a)pyrene	ND<0.009	1	0.0045
Indeno(1,2,3-cd)pyrene	ND<0.009	0.1	0.00045
Dibenz(a,h)anthracene	ND<0.009	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.010**

SB-2S

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.15**	0.1	0.015
Chrysene	**0.16**	0.001	0.00016
Benzo(b)fluoranthene	**0.23**	0.1	0.023
Benzo(k)fluoranthene	**0.075**	0.01	0.00075
Benzo(a)pyrene	**0.16**	1	0.16
Indeno(1,2,3-cd)pyrene	**0.097**	0.1	0.0097
Dibenz(a,h)anthracene	**0.019**	1	0.019
		Total Benzo(a)pyrene Equivalent =	**0.228**

SB-2D

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.01	0.1	0.0005
Chrysene	ND<0.01	0.001	0.000005
Benzo(b)fluoranthene	ND<0.01	0.1	0.0005
Benzo(k)fluoranthene	ND<0.01	0.01	0.00005
Benzo(a)pyrene	ND<0.01	1	0.005
Indeno(1,2,3-cd)pyrene	ND<0.01	0.1	0.0005
Dibenz(a,h)anthracene	ND<0.01	1	0.005
		Total Benzo(a)pyrene Equivalent =	**0.012**

Toxic Equivalency Calculations
Pigeon Property

LE Environmental

SB-4S

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.052**	0.1	0.0052
Chrysene	**0.058**	0.001	0.000058
Benzo(b)fluoranthene	**0.084**	0.1	0.0084
Benzo(k)fluoranthene	**0.027**	0.01	0.00027
Benzo(a)pyrene	**0.065**	1	0.065
Indeno(1,2,3-cd)pyrene	**0.048**	0.1	0.0048
Dibenz(a,h)anthracene	**0.0094**	1	0.0094
		Total Benzo(a)pyrene Equivalent =	**0.093**

SB-4D

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.033**	0.1	0.0033
Chrysene	**0.039**	0.001	0.000039
Benzo(b)fluoranthene	**0.15**	0.1	0.015
Benzo(k)fluoranthene	**0.051**	0.01	0.00051
Benzo(a)pyrene	**0.12**	1	0.12
Indeno(1,2,3-cd)pyrene	**0.090**	0.1	0.009
Dibenz(a,h)anthracene	**0.019**	1	0.019
		Total Benzo(a)pyrene Equivalent =	**0.17**

SB-5

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.009	0.1	0.00045
Chrysene	ND<0.009	0.001	0.0000045
Benzo(b)fluoranthene	ND<0.009	0.1	0.00045
Benzo(k)fluoranthene	ND<0.009	0.01	0.000045
Benzo(a)pyrene	ND<0.009	1	0.0045
Indeno(1,2,3-cd)pyrene	ND<0.009	0.1	0.00045
Dibenz(a,h)anthracene	ND<0.009	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.010**

SB-6

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**1.4**	0.1	0.14
Chrysene	**1.4**	0.001	0.0014
Benzo(b)fluoranthene	**2.2**	0.1	0.22
Benzo(k)fluoranthene	**0.76**	0.01	0.0076
Benzo(a)pyrene	**1.9**	1	1.9
Indeno(1,2,3-cd)pyrene	**1.0**	0.1	0.1
Dibenz(a,h)anthracene	**0.24**	1	0.24
		Total Benzo(a)pyrene Equivalent =	**2.6**

SB-7

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.97**	0.1	0.097
Chrysene	**1.0**	0.001	0.001
Benzo(b)fluoranthene	**1.5**	0.1	0.15
Benzo(k)fluoranthene	**0.56**	0.01	0.0056
Benzo(a)pyrene	**1.3**	1	1.3
Indeno(1,2,3-cd)pyrene	**0.74**	0.1	0.074
Dibenz(a,h)anthracene	**0.16**	1	0.16
		Total Benzo(a)pyrene Equivalent =	**1.8**

Dup SB-5

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	ND<0.009	0.1	0.00045
Chrysene	ND<0.009	0.001	0.0000045
Benzo(b)fluoranthene	ND<0.009	0.1	0.00045
Benzo(k)fluoranthene	ND<0.009	0.01	0.000045
Benzo(a)pyrene	ND<0.009	1	0.0045
Indeno(1,2,3-cd)pyrene	ND<0.009	0.1	0.00045
Dibenz(a,h)anthracene	ND<0.009	1	0.0045
		Total Benzo(a)pyrene Equivalent =	**0.010**

Brownfields Phase II Environmental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*6.26*	*11.59*	*11.07*	*10.97*	*4.45*		
pH (standard units)	*6.27*	*6.41*	*6.69*	*6.78*	*7.01*	*6.27*		
Conductivity (umhos)	*7,460*	*520*	*103.9*	*1,006*	*228.00*	*7,460*		
Temperature (celcius)	*16.0*	*12.3*	*13.1*	*15.0*	*14.6*	*16.0*		
Turbidity (n.t.u.)	*138*	*173*	*113*	*910*	*NR*	*138*		
Sample Date	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*		
VOCs, EPA Method 8260c (ug/l)								
Dichlorodifluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Chloromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Vinyl Chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.13	2
Bromomethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	5
Chloroethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	31,000	
Trichlorofluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Diethyl Ether	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Acetone	ND<1000	**12**	**19**	ND<10	**50**	ND<1000	-	950
1 ,1-Dichloroethene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	7
Methylene chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	680	5
Carbon disulfide	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
Methyl-t-butyl ether (MTBE)	**2,100**	ND<1	ND<1	**2.8**	ND<1	**2,100**	-	11
trans-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	100
1,1-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	270	70
2,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
cis-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	70
2-Butanone(MEK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	511
Bromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	8
Tetrahydrofuran(THF)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	-
Chloroform	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.41	-
1,1,1-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	200
Carbon tetrachloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.24	5
1 ,1-Dichloropropene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
Benzene	**14,000.**	**1.3**	ND<1	ND<1	**1.8**	**13,000.**	0.92	5
1,2-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	5
Trichloroethene (TCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	0.82	5
1,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	5
Dibromomethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
Bromodichloromethane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
4-Methyl-2-pentanone(MIBK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	-
cis-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
Toluene	**34,000**	**1.1**	ND<1	ND<1	**8.2**	**34,000**	-	1000
trans-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
1,1,2-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	5
2-Hexanone	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<1,000	-	-
Tetrachloroethene (PCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	1.5	5
1,3-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
NR = no reading due to meter capabilty

Brownfields Phase II Environmental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*6.26*	*11.59*	*11.07*	*10.97*	*4.45*		
pH (standard units)	*6.27*	*6.41*	*6.69*	*6.78*	*7.01*	*6.27*		
Conductivity (umhos)	*7,460*	*520*	*103.9*	*1,006*	*228.00*	*7,460*		
Temperature (celcius)	*16.0*	*12.3*	*13.1*	*15.0*	*14.6*	*16.0*		
Turbidity (n.t.u.)	*138*	*173*	*113*	*910*	*NR*	*138*		
Sample Date	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*		
VOCs, EPA Method 8260c (ug/l)								
Dibromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,2-Dibromoethane(EDB)	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	0.05
Chlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	100
1,1,1,2-Tetrachloroethane	ND<100	ND<1	ND<2	ND<2	ND<1	ND<100	-	70
Ethylbenzene	**3,900**	**9.4**	ND<1	ND<1	**1.0**	**4,000**	2.2	700
mp-Xylene	**13,000**	**18**	ND<1	ND<1	**3.6**	**14,000**	-	10000**
o-Xylene	**6,000**	**2**	ND<1	ND<1	**1.3**	**6,300**	-	10000**
Styrene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	100
Bromoform	ND<200	ND<2	ND<2	ND<2	ND<2	ND<200	-	-
IsoPropylbenzene	**120**	**1.5**	ND<1	ND<1	ND<1	**140**	-	-
Bromobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,1,2,2-Tetrachloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,2,3-Trichloropropane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	0.02
n-Propylbenzene	**330**	**4.1**	ND<1	ND<1	ND<1	**380**	-	-
2-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
4-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,3,5-trimethylbenzene	**770**	**7.1**	ND<1	ND<1	ND<1	**890**	330	23*
tert-Butylbenzene	ND<100	**2.1**	ND<1	ND<1	ND<1	ND<100	-	-
1,2,4-trimethylbenzene	**2,900**	**22**	ND<1	ND<1	**1.4**	**3,200**	470	23*
sec-Butylbenzene	ND<100	**2.3**	ND<1	ND<1	ND<1	ND<100	-	-
1,3-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	600
p-Isopropyltoluene	ND<100	**1.1**	ND<1	ND<1	ND<1	ND<100	-	-
1,4-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	75
1,2-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	600
n-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	-
1,2-Dibromo-3-chloropropane	ND<20	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<20	-	0.2
1,2,4-Trichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<100	-	70
Hexachlorobutadiene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	-
Naphthalene	**640**	**5.3**	ND<0.5	ND<0.5	**0.55**	**690**	4	0.5
1,2,3-Trichlorobenzene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<50	-	0.9
Total Reported VOCs	**77,760**	**89**	**19**	**2.8**	**68**	**78,700**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Phase II Environmental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*6.26*	*11.59*	*11.07*	*10.97*	*4.45*		
pH (standard units)	*6.27*	*6.41*	*6.69*	*6.78*	*7.01*	*6.27*		
Conductivity (umhos)	*7,460*	*520*	*103.9*	*1,006*	*228.00*	*7,460*		
Temperature (celcius)	*16.0*	*12.3*	*13.1*	*15.0*	*14.6*	*16.0*		
Turbidity (n.t.u.)	*138*	*173*	*113*	*910*	*NR*	*138*		
Sample Date	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*	*6/17/20*		
RCRA Metals, EPA Method 6020a (mg/l)								
Total Arsenic	**0.017**	**0.0057**	Insufficient Water	**0.0031**	Insufficient Water	**0.017**	-	0.010
Total Barium	**1.6**	**0.71**		**0.46**		**1.6**	-	2
Total Cadmium	**0.0012**	**0.0019**		**0.0012**		**0.0012**	-	0.005
Total Chromium	**0.022**	ND<0.001		**0.0019**		**0.024**	-	0.100
Total Lead	**0.12**	**0.0011**		**0.0057**		**0.12**	-	0.015
Total Mercury	ND<0.0001	ND<0.0001		ND<0.0001		ND<0.0001	2.0	0.002
Total Selenium	**0.0047**	ND<0.001		ND<0.001		**0.0034**	-	0.05
Total Sliver	ND<0.001	ND<0.001		ND<0.001		ND<0.001	-	-

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard

Brownfields Phase II Environmental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L)		
Dichlorodifluoromethane	ND<0.5	-
Chloromethane	ND<0.5	-
Vinyl Chloride	ND<0.5	2.
Bromomethane	ND<0.5	-
Chloroethane	ND<0.5	-
Trichlorofluoromethane	ND<0.5	-
Diethyl Ether	ND<5	-
Acetone	ND<10	-
1 ,1-Dichloroethene	ND<0.5	7
tert-Butyl Alcohol (TBA)	ND<30	
Methylene chloride	ND<0.5	5
Carbon disulfide	ND<2	-
MTBE	ND<0.5	-
trans-1,2-Dichloroethene	ND<0.5	100
1,1-Dichloroethane	ND<0.5	-
2,2-Dichloropropane	ND<0.5	-
cis-1,2-Dichloroethene	ND<0.5	70
2-Butanone(MEK)	ND<5	-
Bromochloromethane	ND<0.5	-
Tetrahydrofuran(THF)	ND<5	-
Chloroform	ND<0.5	80*
1,1,1-Trichloroethane	ND<0.5	200
Carbon tetrachloride	ND<0.5	5
1 ,1-Dichloropropene	ND<0.5	-
Benzene	ND<0.5	5
1,2-Dichloroethane	ND<0.5	5
Trichloroethene (TCE)	ND<0.5	5
1,2-Dichloropropane	ND<0.5	5
Dibromomethane	ND<0.5	-
Bromodichloromethane	ND<0.5	80*
4-Methyl-2-pentanone(MIBK)	ND<5	-
cis-1,3-Dichloropropene	ND<0.3	-
Toluene	ND<0.5	1000
trans-1,3-Dichloropropene	ND<0.3	-
1,1,2-Trichloroethane	ND<0.5	5
2-Hexanone	ND<5	-
Tetrachloroethene (PCE)	ND<0.05	5
1,3-Dichloropropane	ND<0.05	-
Dibromochloromethane	ND<0.05	80*

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

Brownfields Phase II Environmental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L) (continued)		
1,2-Dibromoethane(EDB)	ND<0.05	0.05
Chlorobenzene	ND<0.05	100
1,1,1,2-Tetrachloroethane	ND<0.5	-
Ethylbenzene	ND<0.5	700
mp-Xylene	ND<0.5	10000***
o-Xylene	ND<0.5	10000***
Styrene	ND<0.5	100
Bromoform	ND<0.5	80*
IsoPropylbenzene	ND<0.5	-
Bromobenzene	ND<0.5	-
1,1,2,2-Tetrachloroethane	ND<0.5	-
1,2,3-Trichloropropane	ND<0.5	-
n-Propylbenzene	ND<0.5	-
2-Chlorotoluene	ND<0.5	-
4-Chlorotoluene	ND<0.5	-
1,3,5-trimethylbenzene	ND<0.5	-
tert-Butylbenzene	ND<0.5	-
1,2,4-trimethylbenzene	ND<0.5	-
sec-Butylbenzene	ND<0.5	-
1,3-Dichlorobenzene	ND<0.5	-
p-Isopropyltoluene	ND<0.5	-
1,4-Dichlorobenzene	ND<0.5	75
1,2-Dichlorobenzene	ND<0.5	600.
n-Butylbenzene	ND<0.5	-
1,2-Dibromo-3-chloropropane	ND<0.5	0.2
1,2,4-Trichlorobenzene	ND<0.5	70
Hexachlorobutadiene	ND<0.5	-
Naphthalene	ND<0.5	-
1,2,3-Trichlorobenzene	ND<0.5	-
Total Reported VOCs	ND	-

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

*****Read the directions, in their entirety, on the 'Directions' Tab before use.*****

sample information

Site Number:	2019-4863
Site Name:	Pigeon Property
Sample Number:	SB-1
Sample Depth:	0-18"
Sample Date:	6/5/20

1. Select chemicals from dropdown list

2. Input reported concentrations in mg/kg

3. View autocalculated ILCR and HQ associated with each individual chemical reported

Analyte	CASRN	[a]RB-RSV$_{ca}$ (mg/kg)	[b]RB-RSV$_{nc}$ (mg/kg)	Sample Concentration (mg/kg)	Calculated Sample ILCR (unitless)	Calculated Sample HQ (unitless)
2,3,7,8-TCDD TEQ[c]	1746-01-6*	2.25E-06	4.91E-05		Analyte conc. < RL	Analyte conc. < RL
BaP-TE[d]	--	7.28E-02	NA	1.00E-02	1.37E-07	No noncancer RB-RSV
Benzo(a)pyrene[e]	50-32-8	NA	1.72E+01		Included in BaP-TE	Analyte conc. < RL
Total PCBs[f]	1336-36-3	1.14E-01	1.13E+00		Analyte conc. < RL	Analyte conc. < RL
Acetochlor	34256-82-1	NA	1.22E+03		No cancer RB-RSV	Analyte conc. < RL
Acetone	67-64-1	NA	4.06E+04		No cancer RB-RSV	Analyte conc. < RL
Alachlor	15972-60-8	NA	6.08E+01		No cancer RB-RSV	Analyte conc. < RL
Aldrin	309-00-2	2.02E-02	2.10E+00		Analyte conc. < RL	Analyte conc. < RL
Aluminum	7429-90-5	NA	7.25E+04		No cancer RB-RSV	Analyte conc. < RL
Antimony	7440-36-0	NA	2.60E+01		No cancer RB-RSV	Analyte conc. < RL
Barium	7440-39-3	NA	1.12E+04	1.10E+02	No cancer RB-RSV	9.78E-03
Benomyl	17804-35-2	1.16E+02	7.90E+02		Analyte conc. < RL	Analyte conc. < RL
Benzene	71-43-2	6.98E-01	1.11E+02		Analyte conc. < RL	Analyte conc. < RL
Beryllium	7440-41-7	5.67E+02	3.45E+01		Analyte conc. < RL	Analyte conc. < RL
Bis(2-chloro-1-methyl ethyl)ether	108-60-1	NA	2.83E+03		No cancer RB-RSV	Analyte conc. < RL
Boron	7440-42-8	NA	1.47E+04		No cancer RB-RSV	Analyte conc. < RL
Bromate	15541-45-4	5.36E-01	2.93E+02		Analyte conc. < RL	Analyte conc. < RL
Bromochloromethane	74-97-5	NA	1.93E+02		No cancer RB-RSV	Analyte conc. < RL
Bromoxynil	1689-84-5	2.69E+00	9.12E+02		Analyte conc. < RL	Analyte conc. < RL
Butylbenzene, n-	104-51-8	NA	3.50E+03		No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, sec-	135-98-8	NA	7.01E+03		No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, tert-	98-06-6	NA	7.01E+03		No cancer RB-RSV	Analyte conc. < RL
Cadmium (food)	7440-43-9	7.56E+02	6.86E+00		Analyte conc. < RL	Analyte conc. < RL
Carbaryl	63-25-2	3.17E+02	6.08E+03		Analyte conc. < RL	Analyte conc. < RL
Carbon Disulfide	75-15-0	NA	6.08E+02		No cancer RB-RSV	Analyte conc. < RL
Carbon tetrachloride	56-23-5	3.72E-01	1.30E+02		Analyte conc. < RL	Analyte conc. < RL
Chlorobenzene	108-90-7	NA	4.14E+02		No cancer RB-RSV	Analyte conc. < RL
Chromium (III) (insoluble salts)	16065-83-1	NA	4.02E+04	3.40E+01	No cancer RB-RSV	8.45E-04
Chromium (VI)	18540-29-9	9.05E-02	1.16E+02		Analyte conc. < RL	Analyte conc. < RL
Cobalt	7440-48-4	1.51E+02	2.19E+01		Analyte conc. < RL	Analyte conc. < RL
Copper	7440-50-8	NA	1.04E+04		No cancer RB-RSV	Analyte conc. < RL
Di (2-ethylhexyl) phthalate	117-81-7	1.98E+01	1.22E+03		Analyte conc. < RL	Analyte conc. < RL
Dibromochloropropane	96-12-8	6.00E-03	6.63E+00		Analyte conc. < RL	Analyte conc. < RL
Dibromoethane, 1,2-	106-93-4	2.27E-02	1.15E+02		Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,1-	75-34-3	2.10E+00	1.40E+04		Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,2-	107-06-2	2.85E-01	4.95E+01		Analyte conc. < RL	Analyte conc. < RL
Dichloroethylene, cis 1,2-	156-59-2	NA	1.40E+02		No cancer RB-RSV	Analyte conc. < RL
Dichloroethylene, trans 1,2-	156-60-5	NA	1.40E+03		No cancer RB-RSV	Analyte conc. < RL
Dichloropropane, 1,2-	78-87-5	1.51E+00	2.63E+01		Analyte conc. < RL	Analyte conc. < RL
Dioxane, 1,4-	123-91-1	2.78E+00	1.05E+03		Analyte conc. < RL	Analyte conc. < RL
Ethylbenzene	100-41-4	3.68E+00	4.45E+02		Analyte conc. < RL	Analyte conc. < RL
Fluoranthene	206-44-0	NA	2.30E+03		No cancer RB-RSV	Analyte conc. < RL
Fluorene	86-73-7	NA	2.30E+03		No cancer RB-RSV	Analyte conc. < RL
Hexachlorobenzene	118-74-1	1.31E-01	5.61E+01		Analyte conc. < RL	Analyte conc. < RL
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	4.60E+00	2.90E+02		Analyte conc. < RL	Analyte conc. < RL
Hydrogen cyanide	74-90-8	NA	4.91E+01		No cancer RB-RSV	Analyte conc. < RL
Iron	7439-89-6	NA	5.13E+04		No cancer RB-RSV	Analyte conc. < RL
Isopropylbenzene (cumene)	98-82-8	NA	2.56E+02		No cancer RB-RSV	Analyte conc. < RL
Manganese (non-diet)	7439-96-5	NA	1.12E+03		No cancer RB-RSV	Analyte conc. < RL
Mercury (elemental)	7439-97-6	NA	3.13E+00		No cancer RB-RSV	Analyte conc. < RL
Methyl ethyl ketone	78-93-3	NA	1.70E+04		No cancer RB-RSV	Analyte conc. < RL
Methyl tert-butyl ether (MTBE)	1634-04-4	NA	6.49E+02		No cancer RB-RSV	Analyte conc. < RL
Molybdenum	7439-98-7	NA	3.66E+02		No cancer RB-RSV	Analyte conc. < RL
Naphthalene	91-20-3	2.72E+00	2.24E+02		Analyte conc. < RL	Analyte conc. < RL
Nickel	7440-02-0	5.23E+03	9.40E+02		Analyte conc. < RL	Analyte conc. < RL
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	NA	3.70E+03		No cancer RB-RSV	Analyte conc. < RL
Pentachlorophenol	87-86-5	4.84E-01	2.37E+02		Analyte conc. < RL	Analyte conc. < RL
Pentaerythritol tetranitrate (PETN)	78-11-5	NA	1.22E+02		No cancer RB-RSV	Analyte conc. < RL
Perchlorate	14797-73-0	NA	5.13E+01		No cancer RB-RSV	Analyte conc. < RL
Perfluoroheptanoic acid (PFHpA)	375-85-9	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorononanoic acid (PFNA)	375-95-1	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorooctanoic acid (PFOA)	335-67-1	3.96E+00	1.22E+00		Analyte conc. < RL	Analyte conc. < RL
Propoxur (Baygon)	114-26-1	7.88E+01	2.43E+02		Analyte conc. < RL	Analyte conc. < RL
Propyl benzene, n-	103-65-1	NA	2.53E+02		No cancer RB-RSV	Analyte conc. < RL
Selenium	7782-49-2	NA	3.66E+02		No cancer RB-RSV	Analyte conc. < RL
Silver	7440-22-4	NA	2.37E+02		No cancer RB-RSV	Analyte conc. < RL
Tetrachloroethane, 1,1,1,2-	630-20-6	1.32E+00	2.10E+03		Analyte conc. < RL	Analyte conc. < RL
Tetrachloroethylene	127-18-4	2.38E+00	1.13E+02		Analyte conc. < RL	Analyte conc. < RL
Thallium (soluble Thallium)	7440-28-0**	NA	7.33E-01		No cancer RB-RSV	Analyte conc. < RL
Toluene	108-88-3	NA	7.06E+02		No cancer RB-RSV	Analyte conc. < RL
Trichloroethylene	79-01-6	6.81E-01	6.21E+00		Analyte conc. < RL	Analyte conc. < RL
Trichloropropane, 1,2,3-	96-18-4	3.11E-03	8.67E+00		Analyte conc. < RL	Analyte conc. < RL
Trimethylbenzene, 1,2,3-	526-73-8	NA	2.06E+02		No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,2,4-	95-63-6	NA	1.66E+02		No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,3,5-	108-67-8	NA	1.44E+02		No cancer RB-RSV	Analyte conc. < RL
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	1.15E+01	3.49E+01		Analyte conc. < RL	Analyte conc. < RL
Uranium (soluble salts)	NA	NA	4.40E+01		No cancer RB-RSV	Analyte conc. < RL
Vanadium	7440-62-2	NA	2.77E+00		No cancer RB-RSV	Analyte conc. < RL
Vinyl chloride	75-01-4	9.83E-02	8.51E+01		Analyte conc. < RL	Analyte conc. < RL
Xylenes	1330-20-7	NA	2.52E+02		No cancer RB-RSV	Analyte conc. < RL
Zinc	7440-66-6	NA	2.20E+04		No cancer RB-RSV	Analyte conc. < RL
					Sample Cumulative ILCR:	**Sample HI:**
					1.37E-07	1.06E-02

a. RB-RSV$_{ca}$ corresponds to a one-in-one million ILCR. See IRULE Appendix E, Table 1.

b. RB-RSV$_{nc}$ corresponds to a HQ of 1 based on Hypothetical Young Child Resident scenario. See IRULE Appendix E, Table 1.

Notes:
HI = Hazard Index (sum of Hazard Quotients)
HQ = Hazard Quotient
ILCR = Incremental Lifetime Cancer Risk
NA = Not Available
RB-RSV$_{ca}$ = Risk-Based Residential Soil Value based on cancer
RB-RSV$_{nc}$ = Risk-Based Residential Soil Value based on noncancer endpoint
* - CAS Number for 2,3,7,8-TCDD
** - CAS Number is for Metallic Thallium

c. The 2,3,7,8-TCDD TEQ row should include the sum of the concentrations of all dioxins, furans, and dioxin-like PCBs reported as 2,3,7,8-TCDD toxic eqivalents.

d. The BaP-TE row should include the sum of the concentrations for all carcinogenic PAHs (including benzo(a)pyrene) reported as Benzo(a)pyrene toxic equivalents. See direction 6 for designated urban background locations.

e. Benzo(a)pyrene row should include only the concentration of benzo(a)pyrene in order to address its noncancer hazards.

f. The Total PCBs row should include the sum of the concentrations for all PCBs except dioxin-like PCBs. Dioxin-like PCBs should be included in the 2,3,7,8-TCDD TE concentration entry.

Version 09/12/19

*****Read the directions, in their entirety, on the 'Directions' Tab before use.*****

sample information

Site Number:	2019-4863
Site Name:	Pigeon Property
Sample Number:	SB-4S
Sample Depth:	0-18"
Sample Date:	6/5/20

1. Select chemicals from dropdown list

2. Input reported concentrations in mg/kg

3. View autocalculated ILCR and HQ associated with each individual chemical reported

Analyte	CASRN	[a]RB-RSV$_{ca}$ (mg/kg)	[b]RB-RSV$_{nc}$ (mg/kg)	Sample Concentration (mg/kg)	Calculated Sample ILCR (unitless)	Calculated Sample HQ (unitless)
2,3,7,8-TCDD TEQ[c]	1746-01-6*	2.25E-06	4.91E-05		Analyte conc. < RL	Analyte conc. < RL
BaP-TE[d]	--	7.28E-02	NA	9.30E-02	1.28E-06	No noncancer RB-RSV
Benzo(a)pyrene[e]	50-32-8	NA	1.72E+01	6.50E-02	Included in BaP-TE	3.79E-03
Total PCBs[f]	1336-36-3	1.14E-01	1.13E+00		Analyte conc. < RL	Analyte conc. < RL
Acetochlor	34256-82-1	NA	1.22E+03		No cancer RB-RSV	Analyte conc. < RL
Acetone	67-64-1	NA	4.06E+04		No cancer RB-RSV	Analyte conc. < RL
Alachlor	15972-60-8	NA	6.08E+01		No cancer RB-RSV	Analyte conc. < RL
Aldrin	309-00-2	2.02E-02	2.10E+00		Analyte conc. < RL	Analyte conc. < RL
Aluminum	7429-90-5	NA	7.25E+04		No cancer RB-RSV	Analyte conc. < RL
Antimony	7440-36-0	NA	2.60E+01		No cancer RB-RSV	Analyte conc. < RL
Barium	7440-39-3	NA	1.12E+04	4.30E+01	No cancer RB-RSV	3.82E-03
Benomyl	17804-35-2	1.16E+02	7.90E+02		Analyte conc. < RL	Analyte conc. < RL
Benzene	71-43-2	6.98E-01	1.11E+02		Analyte conc. < RL	Analyte conc. < RL
Beryllium	7440-41-7	5.67E+02	3.45E+01		Analyte conc. < RL	Analyte conc. < RL
Bis(2-chloro-1-methyl ethyl)ether	108-60-1	NA	2.83E+03		No cancer RB-RSV	Analyte conc. < RL
Boron	7440-42-8	NA	1.47E+04		No cancer RB-RSV	Analyte conc. < RL
Bromate	15541-45-4	5.36E-01	2.93E+02		Analyte conc. < RL	Analyte conc. < RL
Bromochloromethane	74-97-5	NA	1.93E+02		No cancer RB-RSV	Analyte conc. < RL
Bromoxynil	1689-84-5	2.69E+00	9.12E+02		Analyte conc. < RL	Analyte conc. < RL
Butylbenzene, n-	104-51-8	NA	3.50E+03		No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, sec-	135-98-8	NA	7.01E+03		No cancer RB-RSV	Analyte conc. < RL
Butylbenzene, tert-	98-06-6	NA	7.01E+03		No cancer RB-RSV	Analyte conc. < RL
Cadmium (food)	7440-43-9	7.56E+02	6.86E+00	6.50E+01	8.60E-08	9.48E+00
Carbaryl	63-25-2	3.17E+02	6.08E+03		Analyte conc. < RL	Analyte conc. < RL
Carbon Disulfide	75-15-0	NA	6.08E+02		No cancer RB-RSV	Analyte conc. < RL
Carbon tetrachloride	56-23-5	3.72E-01	1.30E+02		Analyte conc. < RL	Analyte conc. < RL
Chlorobenzene	108-90-7	NA	4.14E+02		No cancer RB-RSV	Analyte conc. < RL
Chromium (III) (insoluble salts)	16065-83-1	NA	4.02E+04	3.60E+01	No cancer RB-RSV	8.95E-04
Chromium (VI)	18540-29-9	9.06E-02	1.16E+02		Analyte conc. < RL	Analyte conc. < RL
Cobalt	7440-48-4	1.51E+02	2.19E+01		Analyte conc. < RL	Analyte conc. < RL
Copper	7440-50-8	NA	1.04E+04		No cancer RB-RSV	Analyte conc. < RL
Di (2-ethylhexyl) phthalate	117-81-7	1.98E+01	1.22E+03		Analyte conc. < RL	Analyte conc. < RL
Dibromochloropropane	96-12-8	6.00E-03	6.63E+00		Analyte conc. < RL	Analyte conc. < RL
Dibromoethane, 1,2-	106-93-4	2.27E-02	1.15E+02		Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,1-	75-34-3	2.10E+00	1.40E+04		Analyte conc. < RL	Analyte conc. < RL
Dichloroethane, 1,2-	107-06-2	2.85E-01	4.95E+01		Analyte conc. < RL	Analyte conc. < RL
Dichloroethylene, cis 1,2-	156-59-2	NA	1.40E+02		No cancer RB-RSV	Analyte conc. < RL
Dichloroethylene, trans 1,2-	156-60-5	NA	1.40E+03		No cancer RB-RSV	Analyte conc. < RL
Dichloropropane, 1,2-	78-87-5	1.51E+00	2.63E+01		Analyte conc. < RL	Analyte conc. < RL
Dioxane, 1,4-	123-91-1	2.78E+00	1.05E+03		Analyte conc. < RL	Analyte conc. < RL
Ethylbenzene	100-41-4	3.68E+00	4.45E+02		Analyte conc. < RL	Analyte conc. < RL
Fluoranthene	206-44-0	NA	2.30E+03	1.00E-01	No cancer RB-RSV	4.35E-05
Fluorene	86-73-7	NA	2.30E+03		No cancer RB-RSV	Analyte conc. < RL
Hexachlorobenzene	118-74-1	1.31E-01	5.61E+01		Analyte conc. < RL	Analyte conc. < RL
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	4.60E+00	2.90E+02		Analyte conc. < RL	Analyte conc. < RL
Hydrogen cyanide	74-90-8	NA	4.91E+01		No cancer RB-RSV	Analyte conc. < RL
Iron	7439-89-6	NA	5.13E+04		No cancer RB-RSV	Analyte conc. < RL
Isopropylbenzene (cumene)	98-82-8	NA	2.56E+02		No cancer RB-RSV	Analyte conc. < RL
Manganese (non-diet)	7439-96-5	NA	1.12E+03		No cancer RB-RSV	Analyte conc. < RL
Mercury (elemental)	7439-97-6	NA	3.13E+00		No cancer RB-RSV	Analyte conc. < RL
Methyl ethyl ketone	78-93-3	NA	1.70E+04		No cancer RB-RSV	Analyte conc. < RL
Methyl tert-butyl ether (MTBE)	1634-04-4	NA	6.49E+02		No cancer RB-RSV	Analyte conc. < RL
Molybdenum	7439-98-7	NA	3.66E+02		No cancer RB-RSV	Analyte conc. < RL
Naphthalene	91-20-3	2.72E+00	2.24E+02		Analyte conc. < RL	Analyte conc. < RL
Nickel	7440-02-0	5.23E+03	9.40E+02		Analyte conc. < RL	Analyte conc. < RL
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	2691-41-0	NA	3.70E+03		No cancer RB-RSV	Analyte conc. < RL
Pentachlorophenol	87-86-5	4.84E-01	2.37E+02		Analyte conc. < RL	Analyte conc. < RL
Pentaerythritol tetranitrate (PETN)	78-11-5	NA	1.22E+02		No cancer RB-RSV	Analyte conc. < RL
Perchlorate	14797-73-0	NA	5.13E+01		No cancer RB-RSV	Analyte conc. < RL
Perfluoroheptanoic acid (PFHpA)	375-85-9	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorononanoic acid (PFNA)	375-95-1	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	NA	1.22E+00		No cancer RB-RSV	Analyte conc. < RL
Perfluorooctanoic acid (PFOA)	335-67-1	3.96E+00	1.22E+00		Analyte conc. < RL	Analyte conc. < RL
Propoxur (Baygon)	114-26-1	7.88E+01	2.43E+02		Analyte conc. < RL	Analyte conc. < RL
Propyl benzene, n-	103-65-1	NA	2.53E+02		No cancer RB-RSV	Analyte conc. < RL
Selenium	7782-49-2	NA	3.66E+02		No cancer RB-RSV	Analyte conc. < RL
Silver	7440-22-4	NA	2.37E+02		No cancer RB-RSV	Analyte conc. < RL
Tetrachloroethane, 1,1,1,2-	630-20-6	1.32E+00	2.10E+03		Analyte conc. < RL	Analyte conc. < RL
Tetrachloroethylene	127-18-4	2.38E+00	1.13E+02		Analyte conc. < RL	Analyte conc. < RL
Thallium (soluble Thallium)	7440-28-0**	NA	7.33E-01		No cancer RB-RSV	Analyte conc. < RL
Toluene	108-88-3	NA	7.06E+02		No cancer RB-RSV	Analyte conc. < RL
Trichloroethylene	79-01-6	6.81E-01	6.21E+00		Analyte conc. < RL	Analyte conc. < RL
Trichloropropane, 1,2,3-	96-18-4	3.11E-03	8.67E+00		Analyte conc. < RL	Analyte conc. < RL
Trimethylbenzene, 1,2,3-	526-73-8	NA	2.06E+02		No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,2,4-	95-63-6	NA	1.66E+02		No cancer RB-RSV	Analyte conc. < RL
Trimethylbenzene, 1,3,5-	108-67-8	NA	1.44E+02		No cancer RB-RSV	Analyte conc. < RL
Trinitrotoluene, 2,4,6- (TNT)	118-96-7	1.15E+01	3.49E+01		Analyte conc. < RL	Analyte conc. < RL
Uranium (soluble salts)	NA	NA	4.40E+01		No cancer RB-RSV	Analyte conc. < RL
Vanadium	7440-62-2	NA	2.77E+00		No cancer RB-RSV	Analyte conc. < RL
Vinyl chloride	75-01-4	9.83E-02	8.51E+01		Analyte conc. < RL	Analyte conc. < RL
Xylenes	1330-20-7	NA	2.52E+02		No cancer RB-RSV	Analyte conc. < RL
Zinc	7440-66-6	NA	2.20E+04		No cancer RB-RSV	Analyte conc. < RL
					Sample Cumulative ILCR:	**Sample HI:**
					1.36E-06	9.49E+00

a. RB-RSV$_{ca}$ corresponds to a one-in-one million ILCR. See IRULE Appendix E, Table 1.

b. RB-RSV$_{nc}$ corresponds to a HQ of 1 based on Hypothetical Young Child Resident scenario. See IRULE Appendix E, Table 1.

Notes:
HI = Hazard Index (sum of Hazard Quotients)
HQ = Hazard Quotient
ILCR = Incremental Lifetime Cancer Risk
NA = Not Available
RB-RSV$_{ca}$ = Risk-Based Residential Soil Value based on cancer
RB-RSV$_{nc}$ = Risk-Based Residential Soil Value based on noncancer endpoint
* - CAS Number for 2,3,7,8-TCDD
** - CAS Number is for Metallic Thallium

c. The 2,3,7,8-TCDD TEQ row should include the sum of the concentrations of all dioxins, furans, and dioxin-like PCBs reported as 2,3,7,8-TCDD toxic eqivalents.

d. The BaP-TE row should include the sum of the concentrations for all carcinogenic PAHs (including benzo(a)pyrene) reported as Benzo(a)pyrene toxic equivalents. See direction 6 for designated urban background locations.

e. Benzo(a)pyrene row should include only the concentration of benzo(a)pyrene in order to address its noncancer hazards.

f. The Total PCBs row should include the sum of the concentrations for all PCBs except dioxin-like PCBs. Dioxin-like PCBs should be included in the 2,3,7,8-TCDD TE concentration entry.

Version 09/12/19

Brownfields Supplemental Site Investigation Report
Pigeon Property
1705 Route 128
Westford, Vermont

DEC SMS#2019-4863, EPA RFA 19093

February 12, 2021

Prepared for:

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404

Co-Operative Insurance Companies
292 Colonial Drive
Middlebury, VT 05753

LE·Environmental

21 North Main Street
Waterbury, Vermont 05676
(802) 917-2001
www.leenv.net
LEE #19-138

Contents

1.0 EXECUTIVE SUMMARY

LE Environmental LLC (LEE) conducted a Brownfields Supplement Site Investigation (SSI) at the Pigeon Property, located at 1705 Route 128, Westford, Chittenden County, Vermont (Site). The SSI was conducted pursuant to the approved Site-Specific Quality Assurance Project Plan Addendum (SSQAPP Addendum) dated November 12, 2020, approved November 16, 2020, and the American Society of Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903-11). This assessment was conducted for the Chittenden County Regional Planning Commission (CCRPC) and Co-Operative Insurance Companies. A portion of this work is supported by the US Environmental Protection Agency (USEPA), the CCRPC, and the nineteen member municipalities in Chittenden County. CCRPC is funding this work via EPA Brownfields Assessment Grant #BF00A00483. The Site owner is the Pigeon Family Living Trust.

The Site includes a vacant residence and a former bus repair garage and gasoline filling station on approximately 3.3 acres of land. The buildings are currently unoccupied and are used for storage. The Site was developed prior to 1858, and historic Site use has included residential, a gasoline filling station, and automotive and bus repair. A small store was also once present on the southeastern portion of the property, and a tannery was noted on the adjoining property to the west in 1869.

The Site is located on the north side of Route 128. The area immediately surrounding the Site is the town center of Westford, with closely spaced residential homes, a municipal office building, a public library, and a town common. The DEC indicates that the Site is in a Vermont Department of Environmental Conservation (DEC) designated “urban background” zone for soil contamination. The topography of the Site is fairly flat on its south side, near Route 128, and then slopes downward to the north, toward the Browns River. There is also a ravine on the eastern side of the Site, which contains an outlet drainage pipe for the town common’s stormwater system. No odors or sheens have been noted on the water exiting the outlet pipe. Portions of the northern and eastern ends of the property appear to have wetland vegetation.

Three structures are currently present on the property. The residence is a two-story, wood framed structure with a full basement. The garage is a single-story, wood framed structure, with a slab on-grade foundation. The third building is a small wood framed shed.

A Phase II Environmental Site Assessment (ESA) was conducted in 2020 to investigate Recognized Environmental Conditions (RECs) identified in a 2019 Phase

I ESA. The ESA concluded the abandoned gasoline underground storage tank (UST) had failed and soils and groundwater in the vicinity were impacted with Volatile Organic Compounds (VOCs) above regulatory standards. A pipe with unknown purpose was also noted on the southern wall of the UST excavation. The excavation could not be extended in this direction due to the presence of Route 128 and special permitting, traffic control and engineering would be required to dig in this area. The limits of the dissolved-phase contaminant plume were not defined during the Phase II ESA.

Shallow and deep soils were found to be impacted with petroleum contamination in the southern portion of the property, near the former UST location, and in the parking area to the east. Shallow soils are impacted with Polycyclic Aromatic Hydrocarbons (PAHs) in the area to the north and northeast of the garage. The limits of the PAH contamination were not defined during the Phase II ESA. LEE recommended additional delineation of soil and groundwater contamination should be completed.

The SSI included a geophysical investigation in the roadway near the suspect pipe noted during the UST removal, an additional round of groundwater sampling of the existing groundwater monitoring wells followed by installation of additional groundwater monitoring wells and a subsequent round of groundwater sampling, a soil boring investigation of shallow soil PAH contamination, drinking water sampling, and a soil vapor investigation.

A geophysical investigation was conducted to investigate the area around the suspect pipe noted on the southern edge of the previous UST excavation on November 24, 2020. No evidence of a pipe or additional USTs beneath Route 128 was noted during the geophysical investigation.

A confirmatory round of groundwater sampling was performed on December 3, 2020. The depth to water ranged from 2.86’ below grade (bg) at MW-1 to 8.62’ bg at MW-5. Concentrations of benzene, toluene, ethylbenzene, xylenes, trimethylbenzenes, and naphthalene in excess of the Vermont Groundwater Enforcement Standards (VGES) were reported in the vicinity of the former UST location (MW-1). Ethylbenzene was reported in MW-2 below the VGES. No contaminant concentrations were reported above laboratory detection limits in MW-3, MW-4, or MW-5. A supply well sample was also obtained on December 3, 2020, and no VOCs were reported in the water supply sample.

Thirteen soil borings were advanced at the Site on December 21, 2020. Ten soil samples and a duplicate were obtained during drilling. Three additional groundwater monitoring wells, four soil gas wells, and two vapor pins were installed.

PAH toxicity equivalency quotient (TEQ) concentrations in excess of the DEC's Statewide Urban Background concentration were identified in five of the ten shallow soil samples obtained in this SSI (SB-102, SB-103, SB-104, SB-105, and SB-106). The northwestern, western, southern, and eastern limits of the PAH-impacted shallow soil were identified by the SSI sampling. However, the northern-most soil shallow soil samples contained PAH TEQ above the DEC's Statewide Urban Background concentration, indicating the extent of the contamination continues to the north some distance. The area of soils impacted is likely correlated to the historic storage of buses, auto parts, and other machinery in this area.

An additional round of groundwater sampling, including the three newly installed monitoring wells, was performed on January 7, 2021. The depth to water ranged from 2.09' bg at MW-7 to 10.27' bg at MW-5. Concentrations of MTBE, benzene, toluene, ethylbenzene, xylenes, trimethylbenzenes, and naphthalene in excess of the VGES were reported in MW-1. A naphthalene concentration in excess of the VGES was reported in MW-8. Concentrations of ethylbenzene and 1,3,5-trimethylbenzene below the VGES were reported in MW-2.

The northern, western, and southern portions of the groundwater contaminant plume have been defined. The eastern edge of the plume is not fully defined, but it likely terminates in the vicinity of MW-8 based on the fairly low concentration of naphthalene reported there.

Three soil gas, two sub-slab soil gas, and one outdoor ambient air sample were obtained on January 2, 2021. The soil gas samples were analyzed for the presence of VOCs via EPA Method TO-15.

Several VOCs were reported in the soil gas samples including: benzene, carbon tetrachloride, ethylbenzene, methylene chloride, tetrachloroethene (PCE), acetone, ethanol, isopropanol, tetrahydrofuran, toluene, Freon 11, and xylenes. None of the reported concentrations exceeded DEC's residential vapor intrusion standards.

LEE has developed the following recommendations during this SSI:

- Groundwater monitoring should continue to be performed on an annual basis to track the groundwater contaminant plume at the Site.
- An evaluation of corrective action alternatives (ECAA) and a corrective action plan (CAP) should be prepared per the requirements of Subchapter 6 of the DEC's I-Rule.

Liquid Level Monitoring Data
Brownfields Phase II ESA
Pigeon Property
1705 Route 128
Westford, Vermont

Measurement Date: December 3, 2020

Well I.D.	Top of Casing Elevation	Depth To Product btoc	Depth To Water btoc	Product Thickness	Specific Gravity Of Product	Water Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	99.22	-	2.86	-	-	-	-	96.36
MW-2	99.74	-	5.81	-	-	-	-	93.93
MW-3	99.03	-	4.70	-	-	-	-	94.33
MW-4	98.68	-	5.09	-	-	-	-	93.59
MW-5	81.18	-	8.62	-	-	-	-	72.56

Notes:
All Values Reported in Feet
btoc - Below Top of Casing
Elevation data relative to 100' at SE corner of garage

Brownfields Phase II ESA
Pigeon Property
1705 Route 128
Westford, Vermont

Measurement Date: January 7, 2021

Well I.D.	Top of Casing Elevation	Depth To Product btoc	Depth To Water btoc	Product Thickness	Specific Gravity Of Product	Water Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	99.22	-	3.57	-	-	-	-	95.65
MW-2	99.74	-	6.19	-	-	-	-	93.55
MW-3	99.03	-	9.37	-	-	-	-	89.66
MW-4	98.68	-	7.25	-	-	-	-	91.43
MW-5	81.18	-	10.27	-	-	-	-	70.91
MW-6	99.99	-	3.80	-	-	-	-	96.19
MW-7	100.30	-	2.09	-	-	-	-	98.21
MW-8	98.37	-	6.31	-	-	-	-	92.06

Notes:
All Values Reported in Feet
btoc - Below Top of Casing
Elevation data relative to 100' at SE corner of garage

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*2.86*	*5.81*	*4.70*	*5.09*	*8.62*	*5.81*		
pH (standard units)	*7.24*	*6.78*	*6.87*	*6.68*	*6.52*	*6.78*		
Conductivity (umhos)	*2,390*	*473*	*1,242*	*866*	*416*	*473*		
Temperature (celcius)	*8.2*	*10.3*	*9.6*	*9.4*	*8.8*	*10.3*		
Turbidity (n.t.u.)	*711*	*749*	*13.4*	*106*	*550*	*749*		
Sample Date	*12/3/20*	*12/3/20*	*12/3/20*	*12/3/20*	*12/3/20*	*12/3/20*		
VOCs, EPA Method 8260c VT Petroleum List (ug/l)								
Methyl-t-butyl ether (MTBE)	ND<200	ND<1	ND<1	ND<1	ND<1	ND<1	-	11
Benzene	**4,900.**	ND<1	ND<1	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<200	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
Toluene	**15,000**	ND<1	ND<1	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<100	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**2,500**	**1.5**	ND<1	ND<1	ND<1	**1.4**	2.2	700
mp-Xylene	**12,000**	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
o-Xylene	**5,700**	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	**880**	ND<1	ND<1	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	**3,300**	ND<1	ND<1	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	**950**	ND<1	ND<1	ND<1	ND<1	ND<1	790	23*
Naphthalene	**710**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**45,940**	**1.5**	ND	ND	ND	**1.4**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*MW-6*	*MW-7*	*MW-8*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*3.57*	*6.19*	*9.37*	*7.25*	*10.27*	*3.80*	*2.09*	*6.31*	*6.19*		
pH (standard units)	*7.11*	*6.75*	*6.95*	*6.55*	*6.84*	*6.73*	*7.11*	*6.82*	*6.75*		
Conductivity (umhos)	*3,430*	*497*	*1,502*	*741*	*809*	*812*	*1,268*	*4,510*	*497*		
Temperature (celcius)	*5.6*	*7.3*	*8.2*	*8.7*	*6.6*	*6.3*	*6.5*	*6.9*	*7.3*		
Turbidity (n.t.u.)	*635*	*814*	*119*	*81.9*	*604*	*853*	*NR*	*520*	*814*		
Sample Date	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)											
Dichlorodifluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Chloromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Vinyl Chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.13	2
Bromomethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	5
Chloroethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	31,000	
Trichlorofluoromethane	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Diethyl Ether	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Acetone	ND<1000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	950
1 ,1-Dichloroethene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	7
Methylene chloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	680	5
Carbon disulfide	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
Methyl-t-butyl ether (MTBE)	**290**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	11
trans-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	100
1,1-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	270	70
2,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
cis-1,2-Dichloroethene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	70
2-Butanone(MEK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	511
Bromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	8
Tetrahydrofuran(THF)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	-
Chloroform	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.41	-
1,1,1-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	200
Carbon tetrachloride	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.24	5
1 ,1-Dichloropropene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
Benzene	**5,900**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
Trichloroethene (TCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	0.82	5
1,2-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
Dibromomethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
Bromodichloromethane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
4-Methyl-2-pentanone(MIBK)	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	-
cis-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
Toluene	**19,000**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	1000
trans-1,3-Dichloropropene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
1,1,2-Trichloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	5
2-Hexanone	ND<1,000	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	ND<10	-	-
Tetrachloroethene (PCE)	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	1.5	5
1,3-Dichloropropane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Groundwater Sample	*MW-1*	*MW-2*	*MW-3*	*MW-4*	*MW-5*	*MW-6*	*MW-7*	*MW-8*	*Duplicate*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*3.57*	*6.19*	*9.37*	*7.25*	*10.27*	*3.80*	*2.09*	*6.31*	*6.19*		
pH (standard units)	*7.11*	*6.75*	*6.95*	*6.55*	*6.84*	*6.73*	*7.11*	*6.82*	*6.75*		
Conductivity (umhos)	*3,430*	*497*	*1,502*	*741*	*809*	*812*	*1,268*	*4,510*	*497*		
Temperature (celcius)	*5.6*	*7.3*	*8.2*	*8.7*	*6.6*	*6.3*	*6.5*	*6.9*	*7.3*		
Turbidity (n.t.u.)	*635*	*814*	*119*	*81.9*	*604*	*853*	*NR*	*520*	*814*		
Sample Date	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)											
Dibromochloromethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,2-Dibromoethane(EDB)	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.05
Chlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	100
1,1,1,2-Tetrachloroethane	ND<100	ND<1	ND<2	ND<2	ND<2	ND<1	ND<2	ND<2	ND<1	-	70
Ethylbenzene	**2,900**	**2**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**2.1**	2.2	700
mp-Xylene	**15,000**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
o-Xylene	**6,800**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	10000**
Styrene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	100
Bromoform	ND<200	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	-	-
IsoPropylbenzene	**120**	ND<1	ND<1	ND<1	ND<1	**1.1**	ND<1	ND<1	ND<1	-	-
Bromobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,1,2,2-Tetrachloroethane	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,2,3-Trichloropropane	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.02
n-Propylbenzene	**350**	ND<1	ND<1	ND<1	ND<1	**2.3**	ND<1	ND<1	ND<1	-	-
2-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
4-Chlorotoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,3,5-trimethylbenzene	**1,000**	**1**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**1.1**	330	23*
tert-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**1.2**	-	-
1,2,4-trimethylbenzene	**4,300**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	470	23*
sec-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**1.2**	-	-
1,3-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	600
1,2,3-Trimethylenzene	**1,100**	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	790	23*
p-Isopropyltoluene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,4-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	75
1,2-Dichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	600
n-Butylbenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	-
1,2-Dibromo-3-chloropropane	ND<20	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	-	0.2
1,2,4-Trichlorobenzene	ND<100	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	-	70
Hexachlorobutadiene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	-
Naphthalene	**690**	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**2.9**	ND<0.5	4	0.5
1,2,3-Trichlorobenzene	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	-	0.9
Total Reported VOCs	**57,450**	**3**	ND	ND	ND	**3.4**	ND	**2.9**	**5.6**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

MW-1

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*4.45*	*2.86*	*3.57*		
pH (standard units)	*6.27*	*7.24*	*7.11*		
Conductivity (umhos)	*7,460*	*2,390*	*3,430*		
Temperature (celcius)	*16.0*	*8.2*	*5.6*		
Turbidity (n.t.u.)	*138*	*711*	*635*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	**2,100**	ND<200	**290**	-	11
Benzene	**14,000.**	**4,900.**	**5,900**	0.92	5
1,2-Dichloroethane	ND<100	ND<200	ND<100	-	5
Toluene	**34,000**	**15,000**	**19,000**	-	1000
1,2-Dibromoethane(EDB)	ND<50	ND<100	ND<50	-	0.05
Ethylbenzene	**3,900**	**2,500**	**2,900**	2.2	700
mp-Xylene	**13,000**	**12,000**	**15,000**	-	10000**
o-Xylene	**6,000**	**5,700**	**6,800**	-	10000**
1,3,5-trimethylbenzene	**770**	**880**	**1,000**	330	23*
1,2,4-trimethylbenzene	**2,900**	**3,300**	**4,300**	470	23*
1,2,3-trimethylbenzene	NT	**950**	**1,100**	790	23*
Naphthalene	**640**	**710**	**690**	4	0.5
Total Reported VOCs	**77,310**	**45,940**	**56,980**		

MW-2

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*6.26*	*5.81*	*6.19*		
pH (standard units)	*6.41*	*6.78*	*6.75*		
Conductivity (umhos)	*520*	*473*	*497*		
Temperature (celcius)	*12.3*	*10.3*	*7.3*		
Turbidity (n.t.u.)	*173*	*749*	*814*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	ND<1	-	11
Benzene	**1.3**	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	**1.1**	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**9.4**	**1.5**	**2**	2.2	700
mp-Xylene	**18**	ND<1	ND<1	-	10000**
o-Xylene	**2**	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	**7.1**	ND<1	**1**	330	23*
1,2,4-trimethylbenzene	**22**	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1	790	23*
Naphthalene	**5.3**	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**66**	**1.5**	**3**		

NOTES:
Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

MW-3

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*11.59*	*4.70*	*9.37*		
pH (standard units)	*6.69*	*6.87*	*6.95*		
Conductivity (umhos)	*103.9*	*1,242*	*1,502*		
Temperature (celcius)	*13.1*	*9.6*	*8.2*		
Turbidity (n.t.u.)	*113*	*13.4*	*119*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	ND<1	-	11
Benzene	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	ND<1	ND<1	ND<1	2.2	700
mp-Xylene	ND<1	ND<1	ND<1	-	10000**
o-Xylene	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1		
Naphthalene	ND<0.5	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	ND	ND	ND		

MW-4

				I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
Depth to Groundwater (Ft)	*11.07*	*5.09*	*7.25*		
pH (standard units)	*6.78*	*6.68*	*6.55*		
Conductivity (umhos)	*1,006*	*866*	*741*		
Temperature (celcius)	*15.0*	*9.4*	*8.7*		
Turbidity (n.t.u.)	*910*	*106*	*81.9*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	**2.8**	ND<1	ND<1	-	11
Benzene	ND<1	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	ND<1	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	ND<1	ND<1	ND<1	2.2	700
mp-Xylene	ND<1	ND<1	ND<1	-	10000**
o-Xylene	ND<1	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	ND<1	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1		
Naphthalene	ND<0.5	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**2.8**	ND	ND		

Brownfields Supplemental Site Assessment
Groundwater Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

MW-5

Depth to Groundwater (Ft)	*10.97*	*8.62*	*10.27*	I-Rule Groundwater Vapor Intrusion Standard-Resident (ug/l)	Vermont Groundwater Enforcement Standard (ug/l)
pH (standard units)	*7.01*	*6.52*	*6.84*		
Conductivity (umhos)	*228.00*	*416*	*809*		
Temperature (celcius)	*14.6*	*8.8*	*6.6*		
Turbidity (n.t.u.)	*NR*	*550*	*604*		
Sample Date	*6/17/20*	*12/3/20*	*1/7/21*		
VOCs, EPA Method 8260c (ug/l)					
Methyl-t-butyl ether (MTBE)	ND<1	ND<1	ND<1	-	11
Benzene	**1.8**	ND<1	ND<1	0.92	5
1,2-Dichloroethane	ND<1	ND<1	ND<1	-	5
Toluene	**8.2**	ND<1	ND<1	-	1000
1,2-Dibromoethane(EDB)	ND<0.5	ND<0.5	ND<0.5	-	0.05
Ethylbenzene	**1.0**	ND<1	ND<1	2.2	700
mp-Xylene	**3.6**	ND<1	ND<1	-	10000**
o-Xylene	**1.3**	ND<1	ND<1	-	10000**
1,3,5-trimethylbenzene	ND<1	ND<1	ND<1	330	23*
1,2,4-trimethylbenzene	**1.4**	ND<1	ND<1	470	23*
1,2,3-trimethylbenzene	NT	ND<1	ND<1		
Naphthalene	**0.55**	ND<0.5	ND<0.5	4	0.5
Total Reported VOCs	**18**	ND	ND		

Groundwater Enforcement Standard from Vermont Groundwater Protection Rule 7/19
Groundwater Vapor Intrusion Standards from Vermont I-Rule 7/19
Reported results or reporting limits equal to or in excess of regulatory criteria are shaded.
Dashed Cell - no standard
* means total trimethylbenzenes ** means total xylenes
NR = no reading due to meter capabilty

Brownfields Supplemental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*DWS* *12/3/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L)			
Dichlorodifluoromethane	ND<0.5	ND<0.5	-
Chloromethane	ND<0.5	ND<0.5	-
Vinyl Chloride	ND<0.5	ND<0.5	2.
Bromomethane	ND<0.5	ND<0.5	-
Chloroethane	ND<0.5	ND<0.5	-
Trichlorofluoromethane	ND<0.5	ND<0.5	-
Diethyl Ether	ND<5	ND<5	-
Acetone	ND<10	ND<10	-
1 ,1-Dichloroethene	ND<0.5	ND<0.5	7
tert-Butyl Alcohol (TBA)	ND<30	ND<30	-
Methylene chloride	ND<0.5	ND<0.5	5
Carbon disulfide	ND<2	ND<2	-
MTBE	ND<0.5	ND<0.5	-
trans-1,2-Dichloroethene	ND<0.5	ND<0.5	100
1,1-Dichloroethane	ND<0.5	ND<0.5	-
2,2-Dichloropropane	ND<0.5	ND<0.5	-
cis-1,2-Dichloroethene	ND<0.5	ND<0.5	70
2-Butanone(MEK)	ND<5	ND<5	-
Bromochloromethane	ND<0.5	ND<0.5	-
Tetrahydrofuran(THF)	ND<5	ND<5	-
Chloroform	ND<0.5	ND<0.5	80*
1,1,1-Trichloroethane	ND<0.5	ND<0.5	200
Carbon tetrachloride	ND<0.5	ND<0.5	5
1 ,1-Dichloropropene	ND<0.5	ND<0.5	-
Benzene	ND<0.5	ND<0.5	5
1,2-Dichloroethane	ND<0.5	ND<0.5	5
Trichloroethene (TCE)	ND<0.5	ND<0.5	5
1,2-Dichloropropane	ND<0.5	ND<0.5	5
Dibromomethane	ND<0.5	ND<0.5	-
Bromodichloromethane	ND<0.5	ND<0.5	80*
4-Methyl-2-pentanone(MIBK)	ND<5	ND<5	-
cis-1,3-Dichloropropene	ND<0.3	ND<0.3	-
Toluene	ND<0.5	ND<0.5	1000
trans-1,3-Dichloropropene	ND<0.3	ND<0.3	-
1,1,2-Trichloroethane	ND<0.5	ND<0.5	5
2-Hexanone	ND<5	ND<5	-
Tetrachloroethene (PCE)	ND<0.05	ND<0.05	5
1,3-Dichloropropane	ND<0.05	ND<0.05	-
Dibromochloromethane	ND<0.05	ND<0.05	80*

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

Brownfields Supplemental Site Assessment
Drinking Water Sampling Data Summary
Pigeon Property
1705 Route 128, Westford, Vermont

Sample *Sample Date*	*DWS-1* *6/17/20*	*DWS* *12/3/20*	*MCL*
VOCs, EPA Method 524.2 (ug/L) (continued)			
1,2-Dibromoethane(EDB)	ND<0.05	ND<0.05	0.05
Chlorobenzene	ND<0.05	ND<0.05	100
1,1,1,2-Tetrachloroethane	ND<0.5	ND<0.5	-
Ethylbenzene	ND<0.5	ND<0.5	700
mp-Xylene	ND<0.5	ND<0.5	10000***
o-Xylene	ND<0.5	ND<0.5	10000***
Styrene	ND<0.5	ND<0.5	100
Bromoform	ND<0.5	ND<0.5	80*
IsoPropylbenzene	ND<0.5	ND<0.5	-
Bromobenzene	ND<0.5	ND<0.5	-
1,1,2,2-Tetrachloroethane	ND<0.5	ND<0.5	-
1,2,3-Trichloropropane	ND<0.5	ND<0.5	-
n-Propylbenzene	ND<0.5	ND<0.5	-
2-Chlorotoluene	ND<0.5	ND<0.5	-
4-Chlorotoluene	ND<0.5	ND<0.5	-
1,3,5-trimethylbenzene	ND<0.5	ND<0.5	-
tert-Butylbenzene	ND<0.5	ND<0.5	-
1,2,4-trimethylbenzene	ND<0.5	ND<0.5	-
sec-Butylbenzene	ND<0.5	ND<0.5	-
1,3-Dichlorobenzene	ND<0.5	ND<0.5	-
p-Isopropyltoluene	ND<0.5	ND<0.5	-
1,4-Dichlorobenzene	ND<0.5	ND<0.5	75
1,2-Dichlorobenzene	ND<0.5	ND<0.5	600.
n-Butylbenzene	ND<0.5	ND<0.5	-
1,2-Dibromo-3-chloropropane	ND<0.5	ND<0.5	0.2
1,2,4-Trichlorobenzene	ND<0.5	ND<0.5	70
Hexachlorobutadiene	ND<0.5	ND<0.5	-
Naphthalene	ND<0.5	ND<0.5	-
1,2,3-Trichlorobenzene	ND<0.5	ND<0.5	-
Total Reported VOCs	ND	ND	-

NOTES:
Drinking Water Standards - Maximum Contaminant Levels (MCLs) published in the Water Supply Rule, 3/2020
ND<xx = Not Detected< Detection Limit; Results reported above detection limits are indicated in bold
Reporting limits and reported concentrations equal to or above the MCL are shaded
* means the indicated enforcement standard is for total trihalomethanes
*** means the indicated enforcement standard is for total xylenes

Brownfields Supplemental Site Assessment
Pigeon Property
Westford, Vermont
Soil Data Summary
Page 1 of 3

Sample Identification	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107	SB-108	SB-109	SB-110	Dup SB-107	*EPA Residential RSL (mg/kg)*	*EPA Industrial RSL (mg/kg)*	*VSS Residential (mg/kg)*	*VSS Non-Residential (mg/kg)*
Sample Depth (ft. bg)	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5	0-1.5				
PID Reading (ppm)	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2				
Sample Date	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20	12/21/20				
PAH EPA Method 8270D (mg/kg)															
Naphthalene	ND<0.008	**0.010**	**0.046**	**0.22**	ND<0.02	**0.10**	**0.0098**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	-	-	2.7	16
2-Methylnaphthalene	ND<0.008	ND<0.008	**0.017**	**0.078**	ND<0.02	**0.039**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	ND<0.008	240	3,000	-	-
1-Methylnaphthalene	ND<0.008	ND<0.008	**0.013**	**0.073**	ND<0.02	**0.031**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	ND<0.008	18	73	-	-
Acenaphthylene	**0.022**	**0.10**	**0.47**	**2.1**	**0.17**	**1.3**	**0.044**	**0.038**	**0.016**	**0.021**	**0.017**	-	-	-	-
Acenaphthene	ND<0.008	ND<0.008	**0.021**	**0.17**	ND<0.02	**0.083**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	ND<0.008	3,600	45,000	-	-
Fluorene	**0.011**	**0.020**	**0.091**	**0.55**	**0.042**	**0.30**	**0.027**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	-	-	2,301	26,371
Phenanthrene	**0.12**	**0.19**	**0.72**	**4.2**	**0.52**	**2.2**	**0.23**	**0.036**	**0.013**	**0.021**	**0.022**	-	-	-	-
Anthracene	**0.017**	**0.060**	**0.29**	**1.4**	**0.092**	**0.99**	**0.041**	**0.014**	ND<0.008	**0.015**	ND<0.008	18,000	230,000	-	-
Fluoranthene	**0.23**	**0.68**	**2.2**	**13**	**1.1**	**6.4**	**0.33**	**0.098**	**0.034**	**0.023**	**0.063**	-	-	2,301	26,371
Pyrene	**0.18**	**0.61**	**1.8**	**12**	**0.86**	**4.8**	**0.22**	**0.10**	**0.031**	**0.077**	**0.052**	1,800	23,000	-	-
Benzo(a)anthracene	**0.083**	**0.41**	**1.4**	**7.2**	**0.44**	**4.1**	**0.12**	**0.055**	**0.019**	**0.011**	**0.032**	1.1	21	-	-
Chrysene	**0.099**	**0.42**	**1.4**	**7.1**	**0.53**	**4.0**	**0.13**	**0.063**	**0.020**	**0.021**	**0.034**	110	2,100	-	-
Benzo(b)fluoranthene	**0.14**	**0.62**	**2.4**	**11**	**0.76**	**6.1**	**0.21**	**0.079**	**0.032**	**0.024**	**0.060**	1.1	21	-	-
Benzo(k)fluoranthene	**0.052**	**0.24**	**0.83**	**3.7**	**0.28**	**2.4**	**0.081**	**0.028**	**0.011**	ND<0.008	**0.023**	11	210	-	-
Benzo(a)pyrene	**0.12**	**0.55**	**2.0**	**9.5**	**0.59**	**4.8**	**0.16**	**0.070**	**0.026**	**0.012**	**0.047**	-	-	0.07	1.54
Indeno(1,2,3-cd)pyrene	**0.086**	**0.38**	**0.94**	**8.0**	**0.24**	**1.5**	**0.065**	**0.025**	**0.011**	**0.021**	**0.023**	1.1	21	-	-
Dibenz(a,h)anthracene	**0.019**	**0.090**	**0.24**	**1.8**	**0.060**	**0.43**	**0.015**	ND<0.008	ND<0.008	ND<0.008	ND<0.008	0.11	2.1	-	-
Benzo(g,h,i)perylene	**0.085**	**0.34**	**0.77**	**8.1**	**0.20**	**1.1**	**0.056**	**0.024**	**0.011**	**0.028**	**0.022**	-	-	-	-
Total Reported PAHs	**1.3**	**4.7**	**15.6**	**90**	**5.9**	**40.7**	**1.74**	**0.63**	**0.22**	**0.27**	**0.40**	-	-	-	-
PAH TEQ as Benzo(a)pyrene	**0.17**	**0.78**	**2.7**	**14**	**0.80**	**6.4**	**0.22**	**0.090**	**0.036**	**0.022**	**0.063**	-	-		0.58 (urban bkgd)

NOTES:
Vermont Soil Standards (VSS) and Statewide Background Concentrations from July 2019 DEC I-Rule
EPA Regional Screening Levels (RSLs) fromMay 2020 RSL Summary Table. RSLs not included when a VSS exists.
Reported results or reporting limits equal to or in excess of residential soil thresholds are shaded.
Dashed Cell=no published value (VSS) or published value not applicable (RSL)

Toxic Equivalency Calculations
Pigeon Property
Page 2 of 3

SB-101

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.083**	0.1	0.0083
Chrysene	**0.099**	0.001	0.000099
Benzo(b)fluoranthene	**0.14**	0.1	0.014
Benzo(k)fluoranthene	**0.052**	0.01	0.00052
Benzo(a)pyrene	**0.12**	1	0.12
Indeno(1,2,3-cd)pyrene	**0.086**	0.1	0.0086
Dibenz(a,h)anthracene	**0.019**	1	0.019
		Total Benzo(a)pyrene Equivalent =	**0.17**

SB-102

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.41**	0.1	0.041
Chrysene	**0.42**	0.001	0.00042
Benzo(b)fluoranthene	**0.62**	0.1	0.062
Benzo(k)fluoranthene	**0.24**	0.01	0.0024
Benzo(a)pyrene	**0.55**	1	0.55
Indeno(1,2,3-cd)pyrene	**0.38**	0.1	0.038
Dibenz(a,h)anthracene	**0.090**	1	0.09
		Total Benzo(a)pyrene Equivalent =	**0.78**

SB-103

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**1.4**	0.1	0.14
Chrysene	**1.4**	0.001	0.0014
Benzo(b)fluoranthene	**2.4**	0.1	0.24
Benzo(k)fluoranthene	**0.83**	0.01	0.0083
Benzo(a)pyrene	**2.0**	1	2
Indeno(1,2,3-cd)pyrene	**0.94**	0.1	0.094
Dibenz(a,h)anthracene	**0.24**	1	0.24
		Total Benzo(a)pyrene Equivalent =	**2.7**

SB-104

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**7.2**	0.1	0.72
Chrysene	**7.1**	0.001	0.0071
Benzo(b)fluoranthene	**11**	0.1	1.1
Benzo(k)fluoranthene	**3.7**	0.01	0.037
Benzo(a)pyrene	**9.5**	1	9.5
Indeno(1,2,3-cd)pyrene	**8.0**	0.1	0.8
Dibenz(a,h)anthracene	**1.8**	1	1.8
		Total Benzo(a)pyrene Equivalent =	**14.0**

SB-105

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.44**	0.1	0.044
Chrysene	**0.53**	0.001	0.00053
Benzo(b)fluoranthene	**0.76**	0.1	0.076
Benzo(k)fluoranthene	**0.28**	0.01	0.0028
Benzo(a)pyrene	**0.59**	1	0.59
Indeno(1,2,3-cd)pyrene	**0.24**	0.1	0.024
Dibenz(a,h)anthracene	**0.060**	1	0.06
		Total Benzo(a)pyrene Equivalent =	**0.80**

Toxic Equivalency Calculations
Pigeon Property

SB-106

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**4.1**	0.1	0.41
Chrysene	**4.0**	0.001	0.004
Benzo(b)fluoranthene	**6.1**	0.1	0.61
Benzo(k)fluoranthene	**2.4**	0.01	0.024
Benzo(a)pyrene	**4.8**	1	4.8
Indeno(1,2,3-cd)pyrene	**1.5**	0.1	0.15
Dibenz(a,h)anthracene	**0.43**	1	0.43
		Total Benzo(a)pyrene Equivalent =	**6.4**

SB-107

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.12**	0.1	0.012
Chrysene	**0.13**	0.001	0.00013
Benzo(b)fluoranthene	**0.21**	0.1	0.021
Benzo(k)fluoranthene	**0.081**	0.01	0.00081
Benzo(a)pyrene	**0.16**	1	0.16
Indeno(1,2,3-cd)pyrene	**0.065**	0.1	0.0065
Dibenz(a,h)anthracene	**0.015**	1	0.015
		Total Benzo(a)pyrene Equivalent =	**0.22**

SB-108

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.055**	0.1	0.0055
Chrysene	**0.063**	0.001	0.000063
Benzo(b)fluoranthene	**0.079**	0.1	0.0079
Benzo(k)fluoranthene	**0.028**	0.01	0.00028
Benzo(a)pyrene	**0.07**	1	0.07
Indeno(1,2,3-cd)pyrene	**0.025**	0.1	0.0025
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.090**

SB-109

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.019**	0.1	0.0019
Chrysene	**0.020**	0.001	0.00002
Benzo(b)fluoranthene	**0.032**	0.1	0.0032
Benzo(k)fluoranthene	**0.011**	0.01	0.00011
Benzo(a)pyrene	**0.026**	1	0.026
Indeno(1,2,3-cd)pyrene	**0.011**	0.1	0.0011
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.036**

SB-110

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.011**	0.1	0.0011
Chrysene	**0.021**	0.001	0.000021
Benzo(b)fluoranthene	**0.024**	0.1	0.0024
Benzo(k)fluoranthene	ND<0.008	0.01	0.00004
Benzo(a)pyrene	**0.012**	1	0.012
Indeno(1,2,3-cd)pyrene	**0.021**	0.1	0.0021
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.022**

Dup SB-107

Contaminant	Concentration (mg/kg)	Toxicity Equivalency Factor	Toxicity Equivalents to Benzo(a)pyrene
Benzo(a)anthracene	**0.032**	0.1	0.0032
Chrysene	**0.034**	0.001	0.000034
Benzo(b)fluoranthene	**0.060**	0.1	0.006
Benzo(k)fluoranthene	**0.023**	0.01	0.00023
Benzo(a)pyrene	**0.047**	1	0.047
Indeno(1,2,3-cd)pyrene	**0.023**	0.1	0.0023
Dibenz(a,h)anthracene	ND<0.008	1	0.004
		Total Benzo(a)pyrene Equivalent =	**0.063**

Brownfields Supplemental Site Assessment
Pigeon Property
Westford, Vermont
Soil Vapor Data Summary

Parameter	SAMPLING LOCATION						Vapor Intrusion Standards Residental	Vapor Intrusion Standards Non-Resident
	Ambient	SG-2	SG-3	SG-4	VP-1	VP-2		
Sampling Date	1/5/21	1/5/21	1/5/21	1/5/21	1/5/21	1/5/21		
EPA TO-15 (µg/m³)	Result	Result	Result	Result	Result	Result		
Acetone	**7.6**	<9.5	<9.5	<9.5	**160**	**10**	-	-
Benzene	**0.47**	<0.32	<0.32	<0.32	<0.32	<0.32	4.3	35
Benzyl chloride	<0.18	<0.52	<0.52	<0.52	<0.52	<0.52	-	-
Bromodichloromethane	<0.23	<0.67	<0.67	<0.67	<0.67	<0.67	-	-
Bromoform	<0.36	<1.0	<1.0	<1.0	<1.0	<1.0	-	-
Bromomethane (Methyl bromide)	<0.14	<0.39	<0.39	<0.39	<0.39	<0.39	-	-
1,3-Butadiene	<0.077	<0.22	<0.22	<0.22	<0.22	<0.22	-	-
Methyl Ethyl Ketone (2-Butanone)	<4.1	<12	<12	<12	<12	<12	-	-
Carbon Disulfide	<1.1	<3.1	<3.1	<3.1	<3.1	<3.1	-	-
Carbon Tetrachloride	**0.50**	<0.63	<0.63	<0.63	<0.63	<0.63	5.7	45
Chlorobenzene	<0.16	<0.46	<0.46	<0.46	<0.46	<0.46	-	-
Chloroethane	<0.092	<0.26	<0.26	<0.26	<0.26	<0.26	330000	1200000
Chloroform	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	1.3	12
Chloromethane	<0.14	<0.41	<0.41	<0.41	<0.41	<0.41	-	-
Cyclohexane	<0.12	<0.34	<0.34	<0.34	<0.34	<0.34	-	-
Dibromochloromethane	<0.30	<0.85	<0.85	<0.85	<0.85	<0.85	-	-
Dibromoethane, (1,2)	<0.27	<0.77	<0.77	<0.77	<0.77	<0.77	-	-
Dichlorobenzene (ortho)	<0.21	<0.60	<0.60	<0.60	<0.60	<0.60	-	-
Dichlorobenzene (meta)	<0.21	<0.60	<0.60	<0.60	<0.60	<0.60	-	-
Dichlorobenzene (para)	<0.21	<0.60	<0.60	<0.60	<0.60	<0.60	-	-
Dichlorodifluoromethane (Freon 12)	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	-	-
Dichloroethane (1,1)	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	21	170
Dichloroethane (1,2)	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	-	-
Dichloroethylene, 1,1-	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	6700	23000
Dichloroethylene, 1,2-cis-	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	-	-
Dichloroethene (trans-1,2)	<0.14	<0.40	<0.40	<0.40	<0.40	<0.40	-	-
Dichloropropane (1,2)	<0.16	<0.46	<0.46	<0.46	<0.46	<0.46	-	-
Dichloropropene (cis-1,3)	<0.16	<0.45	<0.45	<0.45	<0.45	<0.45	-	-
trans-1,3-Dichloropropene	<0.16	<0.45	<0.45	<0.45	<0.45	<0.45	-	-
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	<0.24	<0.70	<0.70	<0.70	<0.70	<0.70	-	-
Dioxane (1,4)	<1.3	<3.6	<3.6	<3.6	<3.6	<3.6	-	-
Ethanol	**4.5**	<7.5	<7.5	<7.5	**250**	**17**	-	-
Ethyl Acetate	<1.3	<3.6	<3.6	<3.6	<3.6	<3.6	-	-
Ethylbenzene	<0.15	<0.43	<0.43	<0.43	**0.47**	<0.43	13	110
4-Ethyltoluene	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	-	-
Heptane	<0.14	<0.41	<0.41	<0.41	<0.41	<0.41	-	-
Hexachlorobutadiene	<0.37	<1.1	<1.1	<1.1	<1.1	<1.1	-	-
Hexane	<4.9	<14	<14	<14	<14	<14	-	-
2-Hexanone (MBK)	<0.29	<0.82	<0.82	<0.82	<0.82	<0.82	-	-
Isopropanol	<3.4	<9.8	<9.8	<9.8	**21**	<9.8	-	-
Methyl tert-butyl ether (MTBE)	<0.13	<0.36	<0.36	<0.36	<0.36	<0.36	-	-
Methylene Chloride	**1.8**	<3.5	<3.5	**6.0**	<3.5	<3.5	2000	27000
4-Methyl-2-pentanone (MIBK)	<0.14	<0.41	<0.41	<0.41	<0.41	<0.41	-	-
Naphthalene	<0.18	<0.52	<0.52	<0.52	<0.52	<0.52	1	8
Propene	<2.4	<6.9	<6.9	<6.9	<6.9	<6.9	-	-
Styrene	<0.15	<0.43	<0.43	<0.43	<0.43	<0.43	-	-
1,1,2,2-Tetrachloroethane	<0.24	<0.69	<0.69	<0.69	<0.69	<0.69	-	-
Tetrachloroethylene	<0.24	**8.9**	**0.85**	<0.68	<0.68	<0.68	21	170
Tetrahydrofuran	<1.0	<2.9	**3.1**	<2.9	<2.9	<2.9	-	-
Toluene	**0.46**	<0.38	<0.38	<0.38	**1.3**	**0.38**	-	-
Trichlorobenzene (1,2,4)	<0.26	<0.74	<0.74	<0.74	<0.74	<0.74	-	-
Trichloroethane (1,1,1)	<0.19	<0.55	<0.55	<0.55	<0.55	<0.55	-	-
Trichloroethane (1,1,2)	<0.19	<0.55	<0.55	<0.55	<0.55	<0.55	-	-
Trichloroethylene	<0.19	<0.54	<0.54	<0.54	<0.54	<0.54	6.7	23
Trichlorofluoromethane (Freon 11)	**1.2**	**7.4**	<2.2	<2.2	<2.2	<2.2	-	-
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.1	<3.1	<3.1	<3.1	<3.1	<3.1	-	-
Trimethylbenzene (1,2,4)	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	2000*	7000*
Trimethylbenzene (1,3,5)	<0.17	<0.49	<0.49	<0.49	<0.49	<0.49	2000*	7000*
Vinyl Acetate	<2.5	<7.0	<7.0	<7.0	<7.0	<7.0	-	-
Vinyl Chloride	<0.089	<0.26	<0.26	<0.26	<0.26	<0.26	3.7	62
m&p-Xylene	<0.30	<0.87	<0.87	<0.87	**1.9**	<0.87	-	-
o-Xylene	<0.15	<0.43	**0.48**	<0.43	**1.0**	<0.43	-	-

NOTES:
1. Vermont Sub-Slab Soil Vapor Intrusion Standards from July 2019 DEC I-Rule
2. < in result column indicates analyte is not detected above the lab reporting limit shown.
3. "-" Indicates no regulatory limits.
4. "*" Standard is sum of all trimethylbenzene isomers
5. Values in bold indicate compound detected above laboratory detection limit
6. Reported results or reporting limits equal to or in excess of residential thresholds are shaded.

APPENDIX C

Cost Estimate

Cleanup Cost Estimate
Excavation and Disposal of Petroluem Contaminated Soil
1705 Route 128
Westford, Vermont
22-Jun-21

Task	Category	Description	No.		Per Unit Cost	Unit	Item Cost	Markup Factor	Total Item Cost	Subtotals
1.0	**Pre-construction**									
	Project Coordination / Bids	Geologist	14	@	$90.00	/hr	$800	1.00	$800	
	VTRANS Permit	Engineer II	4	@	$100.00	/hr	$1,000	1.10	$1,100	
	Contractor Preparation / Coordination	Geologist	2	@	$90.00	/hr	$200	1.00	$200	**$2,100**
2.0	**Construction Inspection and Oversight (4 visits)**									
	Construction Inspection (4 Visits)	Geologist	32	@	$90.00	/hr	$2,880	1.00	$2,880	
	Travel (4 Visits)	Geologist	4.8	@	$90.00	/hr	$432	1.00	$432	
	Mileage (4 Visits)	Expense	256	@	$0.56	/ea	$143	1.00	$143	
										$3,455
3.0	**Construction Costs**									
	Mobilization/Demobilization	Contractor	1	@	$5,000.00	/ls	$5,000	1.00	$5,000	
	Soil Erosion Control	Contractor	1	@	$500.00	/ea	$500	1.00	$500	
	Grading/Common Excavation	Contractor	67	@	$12.35	/cy	$823	1.00	$823	
	Fine Grade, Seed, Mulch	Contractor	100	@	$2.00	/sy	$200	1.00	$200	
	Stockpile Poly and Management	Contractor	1	@	$1,000.00	/ls	$1,000	1.00	$1,000	
	Clean Backfill	Contractor	67	@	$25.60	/cy	$1,707	1.00	$1,707	
	Characterization Sampling	Laboratory	2	@	$1,200.00	/each	$2,400	1.10	$2,640	
	Lab fees - Confirmation Soil Sampling	Laboratory	6	@	$123.00	/each	$738	1.10	$812	
	Soil Transport/Disposal (assumes non-daily cover)	Contractor	100	@	$116.00	/ton	$11,600	1.10	$12,760	**$25,442**
4.0	**Monitoring Well Replacement and Groundwater Sampling**									
	Project Coordination	Geologist	1	@	$90.00	/hr	$90	1.00	$90	
	Travel (2 DAY)	Geologist	3	@	$90.00	/hr	$270	1.00	$270	
	Mileage (2 DAY)	Expense	140	@	$0.575	/each	$81	1.00	$81	
	On-Site-Senior Scientist (2 DAY)	Geologist	14	@	$90.00	/hr	$1,260	1.00	$1,260	
	PID - Full Day	Expense	1	@	$90.00	/each	$90	1.00	$90	
	Survey Equipment	Expense	1	@	$75.00	/each	$75	1.00	$75	
	Drilling Subcontractor	Contractor	1	@	$1,490.14	/each	$1,490	1.10	$1,639	
	Metal Detector	Expense	1	@	$25.00	/day	$25	1.00	$25	
	Peristaltic Pump	Expense	1	@	$75.00	/day	$75	1.00	$75	
	Sample Kit	Expense	6	@	$15.00	/each	$90	1.00	$90	
	Lab Fees - VOCs 8260 GW	Laboratory	6	@	$123.00	/each	$738	1.10	$812	**$4,506**
5.0	**As-Built Report Preparation**									
	Report	Geologist	24	@	$90.00	/hr	$2,160	1.00	$2,160	
	Drafting	Draftsperson II	4	@	$75.00	/hr	$300	1.00	$300	
	Review	Senior Scientist	2	@	$90.00	/hr	$180	1.10	$198	**$2,658**

Cleanup Cost	**$38,162**
15% Contingency	**$5,724**
Total Cost For Project	**$43,886**